Standardization

News Magazine of the American Standards Association, Incorporated

December 1952

Marginal Notes

An Evaluation—

As 1952 draws to a close, STANDARDIZATION looks back on a year of meetings. There was the Company Member Conference at Norfolk, the International Organization for Standardization at New York, the National Standardization Conference at Chicago, and the International Electrotechnical Commission at Scheveningen, Holland. All contributed materially to greater knowledge and understanding of the standardization job. In future years, however, our successors, looking back, will undoubtedly point to the international meetings of 1952 as most significant, marking a turning point in closer international relations in standardization and renewed interest on the part of cooperating groups in the United States.

1952 Annual Meeting—

Another meeting, the last of the year, took place too late to be reported in the December issue. This is the Annual Meeting which features the annual award of The Howard Coonley Medal and The Standards Medal. This year William L. Batt is recipient of The Coonley Medal, and Frank O. Hoagland, of The Standards Medal. The January issue will carry a report on these awards as well as highlights of the Annual Meeting.

The Annual Index—

The January 1953 issue will also include the annual index for Volume 23, 1952, bound as a separate four-page document.

From Research to Standard—

To compile the data on which recommendations of the new American Standard Practice for Industrial Lighting are based, committees worked in industrial plants to collect data on how to light individual jobs. Members of these working committees represented the industries being studied as well as other groups concerned, including public utilities

and illuminating technicians. These committees carried out their work in a number of ways. In some cases they organized research projects. Committee members went into the plant selected, made a detailed study of the tasks to be lighted, the visual problems of each, and the illumination needed for best results. In others, surveys were made of current practice. In still others, experimental installations were set up and actual results studied.

These studies, prepared by subcommittees of the IES Committee on Lighting Study Projects in Industry, have been published as separate documents by the Illuminating Engineering Society. They cover lighting for woolen and worsted textile mills, for machining of small metal parts, for flour mills, for canneries, for bakeries, and for steel mills, open hearth methods. Still to be published are studies of foundries, and of supplementary lighting for specialized applications.

OUR FRONT COVER

On the invitation of the Yugoslavian National Committee of IEC the famous old resort town of Opatija, Yugoslavia, has been selected for its 1953 meeting by the International Electrotechnical Commission. (See page 408 for report of this year's meeting.) Long a popular watering place for Europeans, on the Istrian Peninsula, Adriatic Coast, Opatija is fast regaining its popularity. It boasts many fine hotels, delightful beaches, and beautiful surrounding countryside.

Opinions expressed by authors in STANDARDIZATION *are not necessarily those of the American Standards Association.*

Standardization

Formerly Industrial Standardization

ASA
Reg. U. S. Pat. Off.

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Standardization is dynamic, not static. It means not to stand still, but to move forward together.

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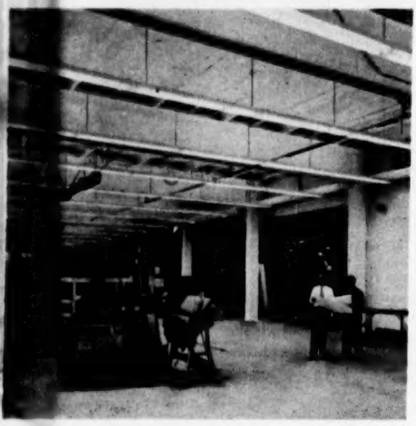
Despite individual fluorescent units over the machines, general illumination from incandescent enclosing globes was inadequate before correction (page 397).

Factory Lighting Can Help Pay Dividends

by E. A. Linsday



For the plant addition shown in the foreground of this photograph, luminaires were chosen to provide adequate upward light and 35-deg cross shielding. Room finishes were light in color to help provide balanced brightness pattern. Lighting level in old plant (in background) is approximately the same as in the new. However, environment is so much improved that management plans on relighting older portions of plant to bring them up to new standards.

As industrial processes are becoming more complex every year, they are becoming harder to see. Labor costs have gone up and there is a greater investment per worker as well as a general higher price per piece for the material being produced. For these and other reasons, lighting has become one of the most important aspects of production in many plants. The benefits of good seeing conditions in more efficient operation of plants as well as in improved safety and better employee morale have been well established over the years. The contribution of good lighting to better seeing, to seeing comfort, and in creating pleasant visual environments is an important factor in accomplishing an efficient production job.

Good seeing conditions improve production in many ways. For example:

1. They offset the shortage of manpower (make it easier to produce more per manhour.)
2. They make conditions more inviting for women to go back into production jobs. (Women

All types of industry benefit from comfortable lighting. This bakery installation uses luminous-sided luminaires with adequate upward light at 35-deg cross shielding and light-colored paint as a help to workmen.

All photographs used in connection with this article courtesy of Illuminating Engineering Society.

The same area shown at top of page 396 after correction. Average illumination level is now somewhat over 60 footcandles. Light colors on room surfaces and machines contribute to better brightness pattern as standard recommends. Luminaires are glass-sided with adequate upward light and 35-deg cross shielding, 25-deg lengthwise shielding.

are more apt to be critical of poor environment.)

3. They reduce accidents. (Accidents are costly in terms of lost time—by the injured, by others in the area, and by executives in handling the compensation required—costly in damage to equipment as well as in disruption of the productive schedule.)
4. They help older workers. (Many older workers have somewhat deficient vision.)
5. They cut handling, inspection, and assembly costs. (In many processes the handling of materials may represent 25 per cent of the time required to build a product. Lighting is helpful in speeding up handling, improving inspection, and assembly.)

There are many other points that could be mentioned in addition to these illustrations of the marked effect good lighting has on efficient production and accident prevention.

An industrial lighting code was first prepared in 1915 by the Illuminating Engineering Society. Revisions of this code under the procedure of the American Standards Association were prepared in 1921 and again in 1930 and 1942 with IES as sponsor. These various editions of the code have contributed greatly to the rapid improvement in industrial seeing conditions. The 1952 revision has just been completed and is now available.

This new edition is another important step forward in encouraging adequate seeing conditions for industrial areas. It utilizes new data obtained from studies and reports carried out under the sponsorship of the Illuminating Engineering Society since the 1942 edition was published. These recent studies have covered lighting for woolen and worsted mills; canneries; commercial bakeries; inspection lighting problems such as supplementary lighting; and lighting for machining small metal parts.

Many of the seeing tasks in industry are very difficult. They involve poor contrast, shiny surfaces, and work in motion. In many cases the worker is in noisy surroundings and in a position that may become uncomfortable. Also, many workers are required to do a variety of tasks involving close accuracy at different distances. Then, too, there may be hazards due to moving work in machines. It is indeed difficult to argue that industrial workers should not have quantity and quality of illumination as good or better than that accepted in many other fields of lighting, such as in offices and schools. The new code recognizes that it is not only desirable to provide pleasant working environments with adequate illumination levels for the industrial worker but that also it is easy to show that better seeing conditions encourage more efficient production wherever they are applied.

As indicated above, the requirements for better quality of products point toward the use of lighting equipment for production with characteristics more like those used in the office or drafting room. Recently, the manufacturers of industrial lighting equipment have made available luminaires which provide the features necessary to create a comfortable working environment. These features include approximately 25 percent upward light, approximately

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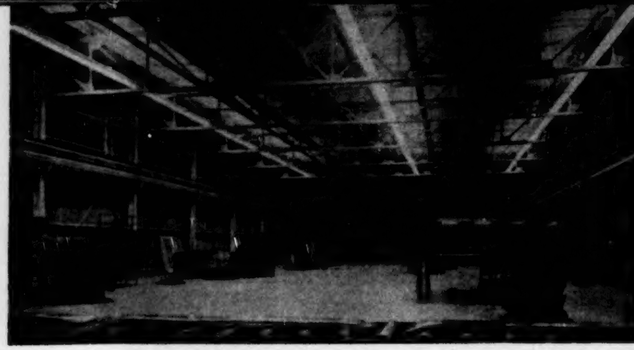
Mr Linsday is with the Lamp Division, General Electric Company, Cleveland, Ohio, and is an alternate representative of the Illuminating Engineering Society on Sectional Committee A11, Lighting Factories, Mills, and Other Work Places.



(Above)—Need for comfortable environment is recognized even in those areas where seeing tasks are relatively simple. Here, 25 footcandles, with a mounting height of 25 feet, provide seeing comfort.

(Left)—Difficult seeing tasks are simplified by the use of aluminum luminaires which provide 150 footcandles. This environment also has adequate upward light, 35-deg cross shielding, 25-deg lengthwise shielding.

35 degree cross shielding (with provisions for approximately 25 degree lengthwise shielding), white finish on the outside of the luminaires as well as on the inside, and smooth inside surfaces so that the heat of the fixture itself induces a draft upward through the fixture to help reduce the rate of dirt accumulation in the fixture.

Possibly the most significant changes in the new code are recognition and increasing acceptance of the philosophy that increased attention should be given to the over-all brightness pattern of the complete working environment, and that additional attention should be given to the problem of maintenance of the lighting system.

Equipment which minimizes maintenance difficulties is receiving wide acceptance. The use of open top fixtures is one indication of this trend. Another is the shift toward 8-ft fluorescent lamps instead of the previous 4-ft types. This, of course, eliminates half of the lamps in a system as well as markedly reducing the number of components necessary to operate them.

As a guide in providing effective industrial lighting, the factors affecting industrial seeing tasks and the elements of good illumination required to perform those tasks are analyzed in the 1952 edition of the Industrial Lighting Code. A wide variety of individual tasks within specific manufacturing categories, from Airplanes through Woodworking are listed alphabetically in convenient tables with the required footcandles for each. Necessary quantities of illumination; qualities of light sources; distribution and diffusion; brightness ratios and reflectance values of surrounding areas are explained and recommended. Many general characteristics of industrial tasks are listed and lighting techniques are recommended for each.

Daylighting and its proper control; artificial light; and lighting systems are explained in detail and methods and recommendations suggested. Programs for maintenance and cleaning of lighting fixtures and room surfaces are also included.

The 1942 Industrial Lighting Code was widely accepted. It contributed a great deal toward the acceptance of reasonable levels of illumination in industry. The new code builds on this fine foundation. It provides the equally essential factor of better quality lighting and good working environment to improve further the productive efficiency of the industrial worker and the industrial plants.

Wide application of the principles outlined in the new code should insure marked improvement in working environment and in over-all productive efficiency for many years to come.

Lighting dirty areas is a difficult problem due to rapid depreciation in light output. Integral reflector lamps make it possible to maintain lighting levels at 80 percent of initial level even in areas like this factory. This installation provides 35 footcandles with 500-watt lamps.

The problem discussed by Dr Barr is being considered by a Joint Committee for the Study of Surgical Materials. Members of this committee represent the American Academy of Orthopedic Surgeons, the American Medical Association, the American College of Surgeons. At a meeting September 21 in New York which was also attended by a number of companies that manufacture surgical and orthopedic equipment, the problem was discussed and plans made for further meetings. Dr P. G. Agnew, Consultant to the American Standards Association, was present. He explained how ASA functions and how its procedures can be used in solving the type of problem outlined by Dr Barr.

The Surgical Experiment

by Joseph S. Barr, M.D.

"Life is short and the art long, the occasion instant, experiment perilous, decision difficult."—Hippocrates

EVERY surgical operation is an experiment in which many variable factors are present, most of them not under the control of the surgeon. Because of these uncontrolled variables the results of operative treatment are predictable only in a statistical fashion by *post hoc* analysis of results obtained in a significant number of similar cases. We recognize that the outcome in an individual case is not accurately predictable and that chance plays a role in determining the result.

But the prospects for a good surgical result are improved by eliminating or controlling unfavorable factors. For instance, we have learned that shock can be controlled or eliminated by good anaesthesia, control of hemorrhage, prompt replacement of blood loss, and gentleness in handling tissues. Wound infection is another variable factor, which can tip the scales toward a disastrous result. The ritual of aseptic technique and the beneficent effects of antibiotic drugs has lowered the chance of infection to an acceptable risk.

The variable factor which I particularly wish to consider today relates to the surgical materials left in the patient's body. Modern surgical techniques utilize and leave within the human body a great variety of materials and devices. Sutures of catgut, cotton, silk, wire, and nylon; fracture fixation materials such as nails, pins, screws, and plates; devices such as Vitallium cups for the hip; prosthetic replacements of nylon, acrylic and various metals for the femoral head; tantalum plates for the repair of cranial defects; hemostatic agents such as Gelfoam and oxidized cellulose are examples of the variety of materials in everyday surgical use.

Success or failure of the surgical procedure is determined in part by physical and biological properties of the materials used. Let me cite two examples of failure of surgical materials. The first example illustrates the problem of physical failure. A surgeon whom I know was finishing an operation in which he had replaced the head of the femur with a beautiful, expensive prosthetic device. As he was closing the incision his scrub nurse inadvertently dropped a spare duplicate of the device on the floor. It broke into several pieces. My surgeon friend was at once faced with questions of the utmost importance. Was the duplicate device defective, or are all of these particular devices inadequate in strength, and will they break under slightly excessive physiological strain. For instance, if his patient should jump or fall two or three feet would the device fail? The manufacturer, of course, is willing to replace the defective, broken duplicate, but the surgeon is responsible for the selection of the device which was used. If it breaks, the manufacturer will disclaim responsibility and the luckless surgeon has an operative failure to add to his record, and may face an embarrassing lawsuit.

There is very little information available on the incidence of operative failure due to defects in surgical materials. Surgeons and manufacturers are both understandably reticent on the subject. But I have no hesitancy in saying that I have had failures of surgical operations due to physical failure of the materials used, and I suspect that most of you could produce similar case reports.

Biological incompatibility of the material with the human body is another cause for operative failure. Let me cite an example. In this instance a knee arthroplasty was done using nylon film as a lining membrane. There was a severe, local, postoperative reaction consisting in massive, phlegmonous thickening of the soft tissues, and synovitis of the knee with development of a draining sinus. On removal of the nylon film the reaction promptly subsided but the operative result is unsatisfactory. In this case the cause of failure may have been either an excessive foreign body reaction or an allergic sensi-

Presidential address presented at the Nineteenth Annual Meeting of The American Academy of Orthopedic Surgeons, Chicago, Illinois, January 29, 1952. Reprinted by special permission from the Journal of Bone and Joint Surgery, *from Vol. 34-A: pp 249-254, April 1952.*

Courtesy Bettman Archive

Surgery has progressed far since the days of this itinerant surgeon who carried all his equipment on his person.

After a copper engraving by Lermessin, France, 1720.

tivity of the patient to nylon. She volunteered the interesting information that she never wore nylon stockings because of skin sensitivity. This appears to be an example of failure due to biological incompatibility. It might easily have been mistaken for postoperative sepsis.

It is not my purpose to attempt a comprehensive classification of the types of materials failure in surgical operations but there are several which are of major importance:

- Breakage, bending, etc, from excessive strain.
- Material weakness due to corrosion.
- Abscess formation or fibrosis due to excessive foreign body reaction.

The surgeon's conscience, and in fact his common sense, tells him that the physical and biological properties of *every* type of material used within the human body can and should be adequately tested before it is released by manufacturers and distributors for general use. Scientific testing methods are available which are much more accurate than clinical trial; and the human guinea pig technique, I submit, is to a large extent outmoded and indefensible. Yet there is an ever increasing number of new devices, many of which have been inadequately designed and tested. Manufacturers of surgical materials and devices furnish little or no specification data and the surgeon who has legal and moral responsibility to see that due care is exercised has no means of substantiating the claims of the inventor and the manufacturer except the risky one of clinical trial.

Are we going to continue with this unhappy trial and error method of procedure or can we devise some better way of obtaining accurate scientific information which will allow us to select the best materials, and to correctly design the devices which we need?

The following propositions appear to be fundamental to a sound approach to the problem:

(*a*) All surgical materials used within the human body should be adequately tested by modern methods and the data concerning their physical and biological properties should be furnished to the surgeon so that he may have sound information as a basis for appropriate selection of materials.

(*b*) The design of surgical devices should be systematically analyzed, mechanically and biologically, to insure that they adequately fulfill their function in the human body.

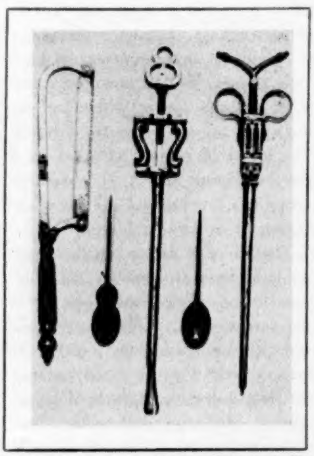
Testing of materials. Modern engineering and testing laboratories have the equipment and know-how to test and furnish specific data concerning the strength of surgical materials. The composition, internal structure, surface finish, and elastic properties of each material should be determined. Testing machines are available which can subject the materials to tension, shear, torsion, and compression strains. Endurance and impact tests can be designed to simulate conditions occurring in clinical use.

Corrosion of certain metals in living tissues has been studied by a number of investigators but there has been no systematic comprehensive investigation of this subject. It is obviously unnecessary and undesirable to pursue clinical experiments in this field. In vitro corrosion tests should be carried out on all surgical materials, individually and in varying combinations, using solutions similar in composition to body fluids. There is clinical evidence that metals such as Vitallium and stainless steel, which individually are inert, if used together in the body show a definite tendency to corrode. We should have accurate corrosion data on all surgical materials.

The biological reaction of living tissues to foreign bodies has been studied for a century or more, but quantitative determinations of the amount of the reaction have been infrequently attempted. Standard methods of measurement of foreign body reaction should be devised and all surgical materials should be so tested.

Design of materials and devices. The form which a piece of surgical apparatus takes is often the chance result of a surgeon's suggestion and an instrument maker's conception of how it should look. Too often, without further formality, the device is tried on a human guinea pig. If it fails structurally it is modified and a new and better model is tried again.

Fortunately, there are more scientific methods for the solution of prob-



Courtesy Bettman Archive

18th Century Surgeon's Tools—saw for amputation, surgical spoons, and instruments for trepanation.

lems of design than trial and error technique. A careful analysis of the function of the device is an essential first step. One must make an accurate estimate of the range and duration of the strain to which the apparatus will be subjected. In many situations, this information is not now available. This should be a fruitful field for future research efforts.

In the case of immobilizing devices, such as sutures, screws, and bone plates, one of the important considerations is the strength of the body tissues to which the device is attached. The forces transmitted to the device cannot exceed the tensile strength of structures.

Having determined the function of a device and estimated the forces to which it will be subjected in actual use, the designer can proceed to select appropriate materials, sketch a suitable form, size, and surface finish for the device, and work out a satisfactory method of fixation of the apparatus to the adjacent living tissues. A model of the device can then be made and tested in the laboratory to ensure that it has adequate strength with a predetermined factor of safety in excess of the strain to which it will be subjected in clinical use.

Resistance to corrosion and the biological reaction of the host tissues to the device can be predicted from tests made previously on the materials of which it is constructed. Devices so designed and tested are then ready for the ultimate experiment of clinical trial, knowing that there are sound reasons to expect that the result will be successful and that certain variable factors which may lead to failure have been eliminated.

We may sum up by saying that there is need for better use of engineering and biologic techniques in the selection of surgical materials and in the design of surgical devices for use within the human body. In present practice we fall far short of utilizing knowledge already available and we are not expanding the frontiers of knowledge in this field as industriously as we should.

How can the present state of affairs be improved? How can we correlate and put to work the scientific technology now scattered in many fields of endeavor—surgery, pathology, biology, metallurgy, engineering, materials testing, design, and production, to name but a few.

Obviously, surgeons and the medical schools with which they may be associated have inadequate resources for this tremendous task. The manufacturers and distributors of surgical supplies are equally helpless. Their answer is "tell us what you want, furnish blueprints and specifications, and we will make it, but it is not our job to tell the surgeon what he needs." Shall we turn to our government to enact legislation similar to the Federal Food and Drugs Act which would prohibit the use of certain materials and require standardization of devices to be used within the human body? Most of us would agree that Federal law is no solution to this problem. It might result in "confusion worse confounded."

"When in English we say that a thing is 'up to standard' or 'of a high standard' or 'a guaranteed standard,' we know what we are talking about. Standards then become at once what they should be—not simply measures of uniformity, but guarantees of fitness for purpose."—*Fifty Years of British Standards.*

I suggest that the medical profession join hands with the manufacturers and distributors of surgical equipment to form a nonprofit organization with the following powers:

1. To test surgical materials and devices and to issue certificates giving specified data concerning the mechanical and biological properties of the articles tested.
2. To conduct and encourage research and to disseminate knowledge in the broad field of surgical engineering.
3. To hold patents and to utilize income derived therefrom for the benefit of humanity.
4. To encourage such standardization of sizes and types of devices as may be in the best interests of the surgical patient.
5. To assist manufacturers in their efforts to produce better surgical materials at decreased cost.

There are organizations now in existence, such as the Chemical Foundation, Inc, and the Underwriters' Laboratories, Inc, successfully operating along lines similar to those I am proposing.

In broad outline the form of this at present nonexistent organization might be sketched in this fashion. It would be a nonprofit corporation sponsored jointly by the medical profession and by the manufacturers of surgical supplies. Its board of directors would include leaders in the fields of engineering, biology, surgery, and manufacturing. The working staff and consultants would be chosen for their technical competence and would have complete engineering and biological laboratory facilities at their disposal. Perhaps we might call this organization the National Surgical Laboratories, Inc.

Upon appropriate request the laboratory would test surgical materials and devices by suitable standard engineering and biological methods. Labels bearing a seal of approval and giving test data might be attached to materials and devices which pass the required tests.

Although the testing and certification of surgical materials and devices would be an important part of the organization's work, its activities would by no means be limited to that function. Its staff would systematically and constantly study the broad underlying problems in the field of surgical engineering. It would conduct, sponsor and encourage research and would issue publications summarizing the results of its investigations.

It would be authorized to hold and administer patents and to utilize income derived therefrom for the furtherance of its work and for the benefit of humanity. The code of ethics of the medical profession forbids its members holding patents for the benefit of an individual. On the other hand, competent authorities point out that the profit motive and an equitable patent law are powerful incentives to the demonstrated prolific inventive genius of the American people. By wise handling of the patent problem and impartial distribution of manufacturing rights this organization might encourage invention and correct existing inequities.

In the early years of the motion picture industry, stoppages and imperfections in films were common. They were caused by irregular perforations and perforation spacings in the film, by non-standard motion picture machinery, and by non-standardized methods of handling film and equipment. In 1916 the Society of Motion Picture Engineers cited such stoppages as a main cause for the lack of popularity of motion pictures among large numbers of people.

Standards have completely eliminated these difficulties. The industry is now highly standardized in processes, product and procedures, not only in this country but internationally. After the American Standard for the location of the sound track on 16-mm film was adopted internationally in the 1930's, many other motion picture standards were internationalized. The ASA Sectional Committee on Standards for Motion Pictures, PH22, made up of 32 organizations, has adopted more than 60 American Standards, and many of these have found world-wide acceptance. Today, motion picture film from one country can be projected in the standard equipment of any other country in the world.

As another of its important functions, the organization would assist manufacturers to standardize sizes and types of devices. For instance, there is now available a bewildering assortment of bone screws which vary in pitch and depth of thread, in shape and size of head design, and they require at least three types of screw drivers for their insertion. Such lack of uniformity of design increases manufacturing costs, necessitates unnecessarily large inventories on the shelves of the distributor, and requires the surgeon and hospital administrator to waste time trying to decide upon the relative merits of a large array of products. Standardization will be of obvious benefit if it is done wisely and through cooperative effort.

Let me here say a word in defense of our friends, the surgical manufacturers, for without them operating rooms stand deserted and surgeons are without tools. They are in general skillful, cooperative, and anxious to furnish the surgeon with the materials and devices which he needs. But surgical manufacturing is a relatively small, highly competitive business. Each firm has limited finances and lacks the facilities and personnel necessary for adequate research. The manufacturer buys in small quantities and may be forced to accept materials which are inadequately tested or which are not of the highest quality. The large producers of basic materials, such as steel and plastics, will, I am certain, make every effort to meet the needs of the surgical manufacturers when those needs have been scientifically demonstrated. The organization which I am suggesting can assist manufacturers to obtain standardized materials of uniform quality, at reduced cost.

I have so far tried to demonstrate that at present surgical materials and devices are inadequate in many respects and have sketched in outline form a method whereby the present situation might be greatly improved. It is not important that the plan I have suggested be adopted; it is important that the problem be adequately studied, and that steps be taken to improve the present unhappy situation.

I am delighted to be able to tell you that I see many evidences of the willingness of the medical profession and of surgical manufacturers to cooperate in solving these mutual problems. The executive committee of the American Academy of Orthopedic Surgeons has discussed the matter and is willing to consider the possibility of joint sponsorship, with other interested organizations, of a suitable plan. In unofficial conversations, representatives of the Surgical Trade Association, the American Medical Association, and the American College of Surgeons have evinced an interest in this problem and a willingness to work together in attempting its solution. A joint committee with representatives from each of the above-mentioned societies is being formed to gather evidence, study the alternatives, and to make suitable recommendations to the sponsoring organizations. That committee has large responsibilities and I am firmly convinced that it has an unparalleled opportunity to help place

(*Continued on page* 422)

A Proposal for "Integral" International Standardization

(Presented to the ISO Council at its meeting, New York, June 15-18, 1952)

by Dr Albert Caquot
President, International Organization for Standardization

STANDARDIZATION by multiple means has one purpose only, and that is to bring about, through its decisive effect on the quality and quantity of articles and materials, an essential improvement in the standard of living of all peoples.

In a civilization which puts to use every means which nature provides, no one in these days can possibly know enough about the various techniques he employs to be able to derive the best advantage from them. Fortunately, however, standardization makes available to us in concrete form the techniques and scientific knowledge acquired by other workers. By supplying us with reliable data which help to complete our knowledge, it enables us to achieve further progress in techniques with which we are familiar, without the risk of error due to ignorance of the non-familiar elements of the problem.

Thus standardization is international by its very purpose, namely, to make it possible for all the scientific or industrial progress of any given country to be turned to advantage by all other countries.

There are two initial difficulties in the way of this desirable collaboration by all peoples:

The question of languages

The first concerns the multiplicity of languages. Languages impress the mind differently according to national habits, and national habits have been crystallized by national educational systems which vary from one country to another.

Technical terms in particular are difficult to translate and have not exactly the same connotation in all languages, even if the general sense of the corresponding terms is the same. That is where standardization comes to the rescue, provided it has been carefully thought out for each standard, beginning with the mental discipline known as a definition. A definition must be both accurate as regards the scientific data on which it is based, and exactly delimited in scope by the frontiers of its field of application as described in the standard concerned.

Once such a definition has been agreed upon, the figures included in the standard will fix concrete magnitudes once and for all beyond any shadow of doubt, and those magnitudes can then be rendered into any language with absolute accuracy.

The scientific method, if applied rigorously to standards, would thus completely solve the difficulties otherwise arising from differences in language were this scientific method not used.

The question of units

More serious is the difficulty arising out of the different base units.

Different units evoke in everyone's mind different sets of images for every magnitude defined numerically. In pure science, the adoption by scholars, first of the centimeter-gram-second system, then of the various derivative systems, has now eliminated this difficulty which, throughout the sixteenth, seventeenth, and eighteenth centuries, when science was growing to maturity, often made the determination of scientific equivalents a matter of extreme difficulty.

Dr Albert Caquot

In industry the same solution has been adopted in the new techniques, such as electricity; however, it cannot be immediately adopted in the older industries where the use of different practical units of measure represents a state of affairs to which standardization must adapt itself.

This major difficulty can be surmounted by the adoption of the agreements suggested below for achieving integral international standardization. Such standardization would be a considerable factor making for peace and prosperity, since it would enormously increase the power of existing national standardization bodies and make available to all, in a very short time, every progress achieved in any country of the world.

Fixed ratio between base units

The first agreement concerns the calculation of a fixed ratio, a non-dimensional number, between the corresponding units of the different systems. For example, to take the most important case, that of linear measures, it is easy to link the inch and the centimeter by agreeing that 1 inch and 2.54 centimeters represent the same magnitude, provided each is based on the same standard.

The ratio for units of area, volume, capacity, mass, etc would be fixed in the same way.

Scales of magnitude

The second agreement concerns the establishment of scales of concrete magnitude, which would be standardized individually and would then become international magnitudes.

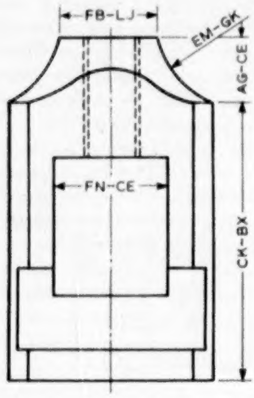
Their definition, in the various countries, might consequently be fixed by the units of measure appropriate to each and with the same degree of strictness, since in the first

agreement the exact relative value of the units would be defined.

Symbol for each magnitude

The third agreement would determine the appropriate symbol for each real magnitude. To avoid any possibility of error and to be sure not to favor any particular existing system of units, this symbol would not be a number but a group of letters.

It should be observed that representation by this system is really a form of notation, but on a 25-figure basis, whereas our usual notation is on a 10-figure basis.



Front View

Consequently, this representation by letters will be shorter than with a figure system because two letters are sufficient for 625 magnitudes, three for 15,625, four for 390,625, etc (the letter "O" would not be used so as to avoid any possibility of confusion with the figure "0").

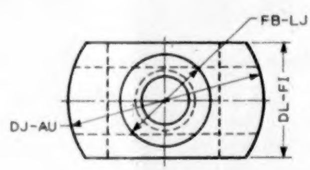
System of tolerances

No concrete magnitude can be achieved with absolute accuracy to its theoretic value because some error in manufacture is unavoidable. For a judicious use of any particular magnitude, this error must be confined to two limits taken from various series of tolerances. These series would be defined by symbols, showing exactly for a particular magnitude the total of the two limits according to the degree of manufacturing accuracy required, as is already done with most standardization on a nationwide basis.

But it is possible to simplify considerably the equivalence between the symbol and the limits if it is observed that each limit is the sum of three elements, two of them systematic, the first fixed by an absolute value, the second by a relative value, and the third by a fractional power of the real magnitude, according to the margin of error which is statistically to be expected from the type of manufacture.

This fourth agreement would immediately endow standardization with that character of integrality which is of the very essence of international organization.

The state of standardization as it exists at present shows that it is both possible and desirable to employ purely mathematical laws in dealing with these three last questions, namely, Scales of magnitude; Symbol for each magnitude; and System of tolerances. Existing standards as given in tables present certain anomalies due either to historical facts or to that unjustifiable love of round numbers to which nature is just as much a stranger as is the tool in the workshop. These few anomalies, which lead to irregular margins of error, are always a source of trouble in the finished article.



Top view

International standardization demands both more logic and more simplicity.

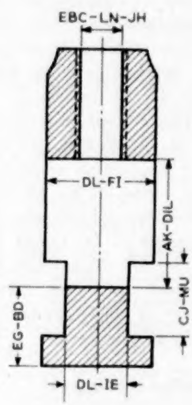
Just to take one example, the following shows how, by using this method, drawings in the drawing-office could be simplified, material errors could be avoided, and series of machines of various sizes could be constructed more rapidly if these measures were adopted. What is more, the products of all sorts of factories could be made interchangeable and manufacture could be undertaken in any country without changing labor or management practices.

The President of the ISO is convinced of the immense possibilities offered by technical language rendered entirely logical by standardization, as a means of increasing mutual understanding between peoples. Once this understanding is achieved, international cooperation will become extremely active, everyone's standard of living will rise, and the resulting benefits for peace will ensure that peace is everlasting.

Example of the Application of This Method

Drawing, which plays such a prominent part in our modern economy, is particularly well adapted to the application of this method.

The example given here relates to the problem of dimensions. Each of the standardized magnitudes would be given a symbol.



Cross section

In the following, we make the purely arbitrary supposition that international standardization has adopted the following symbols:

—the first letters to represent the nominal dimension,

—the following letters in the same line, separated by a hyphen, to represent the tolerances defined by this symbol.

When the surfaces thus defined are to undergo some further special process, such as polishing, screw-thread-

ing, etc, another symbol is used to define the appropriate process.

For example, in the drawing, the symbol EBC—LN—JH designates:

by EBC the nominal diameter of the hole bored

by LN the tolerances for this dimension

by JH the pitch and the profile of the thread by reference to the appropriate standards.

These designations are given to explain the principle. It will be for the relevant international organization to give final shape to such standardization.

The part illustrated by two views and one cross section consists of a cylinder, diameter DJ-AU and height CK-BX, surmounted by a torus, height AG-CE. EM-GK is the radius of the cross section circle of the torus and FB-LJ is the diameter of the circular top.

The part is sliced by two vertical planes, DL-FI apart, parallel to its axis, and is pierced by a prism-shaped hole, width FN-CE and height AK-DIL.

Through the upper part of the cylinder a hole is bored along the axis diameter EBC-LN, screw-threaded to the standardized pitch JH.

In the lower part of the cylinder two prism-shaped slots are cut, DL-IE apart and CJ-MU in height.

Manufacture to the required degree of precision can be begun immediately, even for the prototype, provided the dimensions given above are defined and checked by the appropriate gages which will already be available in the stock of measuring instruments, and this will apply in every country that has established completely international standards of this type.

Thus the use of symbols of this kind will produce real technical collaboration between all advanced industries, as well as perfect co-ordination between drawing-office and workshop.

This example shows how a real international language of scrupulous precision can be applied immediately to the drawings of any new piece of machinery.

But this is only one example, and symbols of this kind can be extended to many other fields, such as to the nature of materials, to their treatment by mechanical processes, heat processes, etc.

Metal Thicknesses Revised

A 1952 revision of the American Standard, Preferred Thicknesses for Uncoated Thin Flat Metals (Under 0.250 In.), B32.1-1952, has just been approved by the American Standards Association. It has been developed by ASA Committee B32, on Wire Diameters and Metal Thicknesses, jointly sponsored by the American Society of Mechanical Engineers and the Society of Automotive Engineers. Chairman of the committee is I. V. Williams, Bell Telephone Laboratories.

Twenty-five years ago, American industry in a general conference held by the ASA decided that it would be preferable to designate the diameters of wires, the thicknesses of metal sheets and plates, and the wall thicknesses of tubes, by decimal fractions of an inch, rather than by the traditional gage numbers. A large number of gage number systems was found to be in existence and the fact that a given number would designate different thicknesses, depending on the kind of metal, caused considerable confusion.

The ASA Committee B32 not only adopted in principle designation by decimal inches, but also developed the American Standard B32.1 covering the range of sheet metal thicknesses from 0.004 to 0.224 by values progressing in accordance with the 20-series of Preferred Numbers. That is, the step-up between two consecutive thicknesses was 6 percent.

The new American Standard differs from the 1941 edition in that the thicknesses are stepped up from 0.004 to 0.236 in. in accordance with the 40-series of Preferred Numbers, or by 3 percent. Therefore, the designer has a wider choice of thicknesses. Also, some of the values that have been added in the new standard are identical with, or close to thicknesses contained in the gage number systems. Thus, it will be easier for sheet metal designers who so far have used gage numbers to change to the 1952 American Standard, than it was for them to adopt the 1941 edition.

A basic advantage of the American Standard is that the recommended thicknesses apply to all sheets, independent of the kind of metal. This is important particularly where products, such as sheet metal covers, first made of one kind of metal, have to be made of another metal—for example, due to priority regulations. The difficulties of substitution are minimized because the new products are dimensionally interchangeable with the original ones.

It is expected that the advantages of the new American Standard will cause it to be adopted more quickly in practice than has been the case with the 1941 edition. The main difficulty so far has been that warehouses have largely continued to stock sheet metal in accordance with gage numbers. Many users, not being able to purchase sheet metal with American Standard thicknesses from stock, were thus obliged to continue using products made to gage numbers.

Considerable impetus to the introduction of the original American Standard (1941) in practice has been given in recent years by the aircraft and telephone industries. It is hoped that this improvement will continue, even at a faster rate, now that a wider choice of American Standard thicknesses is available to the designer.

Copies of the American Standard, Preferred Thicknesses for Uncoated Thin Flat Metals (Under 0.250 In.), B32.1-1952, are available at $1.00.

ASTM Considers New Standards

The American Society for Testing Materials' Administrative Committee on Standards was asked to take action on a greater number of new and revised specifications and tests than ever before at its meeting September 5. Those approved will be included in the 1952 Book of ASTM Standards now on the press. An explanation of the revisions and of the new specifications and tests is given in the *ASTM Bulletin* (October 1952, pp 10-13).

Actions on Standards, September 5, 1952

All actions listed below were taken on the above date except as noted

New Tentatives

Method of:

- Test for Clay Pipe (C301-52T)
- Bromide and Iodide Ions in Industrial Water (D1246-52T)
- Examination of Water-Formed Deposits by Means of Chemical Microscopy (D1245-52T)
- Cell Type Oven with Controlled Rates of Ventilation (E95-52T)
- Sampling for the Testing of Cotton Fibers (D1242-52T)
- Test for Fiber Weight per Unit Length and Maturity of Cotton Fibers (Array Method) (D1243-52T)
- Test for Rosin Acids in Fatty Acids (D1240-52T) (Approved Sept. 23, 1953)

Specifications for:

- Iron-Chromium and Iron-Chromium-Nickel Alloy Tubular Centrifugal Castings for General Applications (A362-52T)
- Zinc-Coated Steel Overhead Ground Wire Strand (A363-52T)
- Brazing Filler Metal (B260-52T)
- Materials for Soil-Aggregate Subbase, Base and Surface Courses (D1241-52T)
- Laminated Asbestos Thermal Insulation for Pipes (C299-52T)
- Cellular Asbestos Paper Thermal Insulation for Pipes (C298-52T)
- Mineral Wool Pipe Insulation; Molded Type (Low Temperatures) (C300-52T)
- Unorganic Aggregates for Use in Interior Plaster (C35-52T) (to replace existing Standard C35-39)

Recommended Practice:

- Designation of Yarn Construction (D1244-52T)
- Radiographic Testing (E94-52T)

Tentative Revisions of Standards

Method of:

- Test for Alternating Current Core Loss and Permeability of Magnetic Materials (A343-49)
- Test for Sieve Analysis of Wet Milled and Dry Milled Porcelain Enamel (C285-51T)
- Testing Emulsified Asphalts (D244-49)

Specifications for:

- Copper and Copper-Alloy Seamless Condenser Tubes and Ferrule Stock (B111-52)
- Manganese Bronze Rod, Bar, and Shapes (B138-52)
- Masonry Cement (C91-51)
- Vitrified Clay Filter Block for Trickling Filters (C159-51)

Definitions of:

- Terms Relating to Structural Clay Tile (C43-50)

Revisions of Standards and Reversion to Tentative

Method of:

- Sampling Industrial Water (D510-52T)

Specifications for:

- Zinc-Coated Steel Wire Strand ("Galvanized") and Class A ("Extra Galvanized") (A122-52T)
- Zinc-Coated Steel Wire Strand (Class B and Class C Coatings) (A218-52T)

Revisions of Tentatives

Method of:

- Testing and Standardization of Etched-Stem Liquid-in-Glass Thermometers (E77-52T)
- Testing Cotton Fibers (D414-49T)

Specifications for:

- Steel for Bridges and Buildings (A7-52T)
- Structural Silicon Steel (A94-52T)
- Structural Steel for Locomotives and Cars (A113-52T)
- Structural Steel for Ships (A131-52T)
- Low-Alloy Structural Steel (A242-52T)
- Low and Intermediate Tensile Strength Carbon-Steel Plates of Structural Quality (A283-52T)
- Low and Intermediate Tensile Strength Carbon-Silicon Steel Plates of Structural Quality (A284-52T)
- Structural Nickel Steel (A8-52T)
- Boiler and Firebox Steel for Locomotives (A30-52T)
- Open-Hearth Iron Plates of Flange Quality (A129-52T)
- Carbon-Silicon Steel Plates of Intermediate Tensile Ranges for Fusion-Welded Boilers and Other Pressure Vessels (A201-52T)
- Chromium-Manganese-Silicon (CMS) Alloy-Steel Plates for Boilers and Other Pressure Vessels (A202-52T)
- Nickel-Steel Plates for Boilers and Other Pressure Vessels (A203-52T)
- Molybdenum-Steel Plates for Boilers and Other Pressure Vessels (A204-52T)
- High Tensile Strength Carbon-Silicon Steel Plates for Boilers and Other Pressure Vessels (A212-52T)
- Manganese-Vanadium Steel Plates for Boilers and Other Pressure Vessels (A225-52T)
- Low and Intermediate Tensile Strength Carbon-Steel Plates of Flange and Firebox Qualities (A285-52T)
- High Tensile Strength Carbon-Manganese-Silicon Steel Plates for Boilers and Other Pressure Vessels (A299-52T)
- Chromium Molybdenum Steel Plates for Boilers and Other Pressure Vessels (A301-52T)
- Manganese-Molybdenum Steel Plates for Boilers and Other Pressure Vessels (A302-52T)
- Quenched and Tempered Steel Bolts and Studs with Suitable Nuts and Plain Washers (A325-52T)
- Carbon-Steel Blooms, Billets and Slabs for Forgings (A273-52T)
- Alloy-Steam Blooms, Billets and Slabs for Forgings (A274-52T)
- Copper Rod, Bar and Shapes (B133-51T)
- Rope-Lay-Stranded Copper Conductors Having Bunch-Stranded Members for Electrical Conductors (B172-52T)
- Rope-Lay-Stranded Copper Conductors Concentric-Stranded Members for Electrical Conductors (B173-52T) (Approved Aug 1, 1951)
- Bunch-Stranded Copper Conductors for Electrical Conductors (C174-52T) (Approved Aug 1, 1952)
- Air-Entraining Additions for Use in the Manufacture of Air-Entraining Portland Cement (C226-52T)
- Mortar for Unit Masonry (C270-52T)
- Ceramic Glazed Structural Clay Facing Tile, Facing Brick, and Solid Masonry Units (C126-50T)
- Structural Clay Facing Tile (C212-52T)
- Chemical - Resistant Masonry Units (C279-52T)
- Reagent Water (D1193-52T)

Recommended Practice for:

- Boiling Nitric Acid Test for Corrosion-Resisting Steels (A262-52T)


These two photos show how wiring for telephones can be neatly hidden by building standard holes and wiring channels in the desk. Wire is run through standard channels inside the desk to outlet hole connecting with main telephone cable.

How to Conceal Telephone Wires, Keep Desks Neat

by A. R. Hutchinson

Assistant Superintendent, Office Standards, Western Electric Company

IN modern construction a great deal of effort is expended to provide adequate raceways and conduits in all parts of a building to give maximum concealment and protection to telephone wires and cables. A logical extension of this effort is to conceal telephone wiring and apparatus in the desk on which the telephone is placed.

Desks arranged for the concealment of wiring and apparatus serve a two-fold purpose:

(1) No wire or cable is exposed on the desk surface to detract from its appearance.

(2) When necessary to remove wiring and apparatus from a desk, no tack or screw holes are visible to mar the surface of the desk.

Recognition of the increased importance of concealing telephone wiring and apparatus in desks has led to adoption of American Standard Provisions for Installation of Telephone Equipment in Desks, X2.1.2-1952. This standard suggests certain arrangements that will accomplish this purpose. Although a number of desk manufacturers are already providing arrangements for concealment of wiring and apparatus, it is desirable, of course, to obtain standard facilities for concealment from as many desk manufacturers as possible.

Mr Hutchinson is chairman of Subcommittee 1 on Office Equipment (Furniture) of ASA Sectional Committee on Office Standards, X2.

The standard sets up general specifications for wiring channels, mounting details for equipment, such as connecting blocks and bell boxes, and inconspicuous entrance holes for incoming wire or cable and for the telephone cord terminating in the telephone set. Internal construction of commercial desks is such that suitable facilities to accommodate concealed standard wiring can be readily incorporated at little additional expense when the desk is manufactured.

The cooperation of manufacturers in furnishing customers the means for preserving desk appearance would add sales value to their product. It would also facilitate the work of the telephone company and increase the satisfaction of the customer in telephone installations on desks.

The suggested concealment arrangements shown in the drawings are designed for the average telephone installation. They will be found adequate for 90 percent of desk installations. They do not attempt to cover unusual installations which require more extensive equipment and cabling and for which it would not appear to be economical to make provisions in all desks. In these special installations several lines may terminate at a desk and it may be necessary to mount relay equipment on the desk. In addition, some of the larger installations require a large-sized cable and several connecting blocks. It would be impracticable to provide for concealment for such unusual cases in all desks. In the more complicated installations, special arrangements will be required to conceal the cable and apparatus. The local telephone company is ready to assist desk manufacturers or purchasers in arriving at satisfactory arrangements for these special cases.

The new American Standard was developed from a proposal submitted by the Telephone Group to Subcommittee 1 on Office Equipment (Furniture) of the Sectional Committee on Office Standards, X2. This committee works under the procedure of the American Standards Association and is sponsored by the National Office Management Association. Membership on the subcommittee included representatives of the Steel Equipment Group of the Office Equipment Manufacturers Institute, the Wood Furniture Institute, Federal Government organizations, and other organizations representing large groups of desk users. Their views and comments were included in the standard as finally developed. Its apparent advantages to all concerned would seem to warrant a wide acceptance of the standard by the manufacturers.

Copies of American Standard Provisions for Installation of Telephone Equipment in Desks, X2.1.2-1952, can be obtained from the American Standards Association at $0.25.

What IEC Technical Committees Are Accomplishing

IN an unusually productive series of meetings, 26 technical committees of the International Electrotechnical Commission discussed international agreement on electrical standards at Scheveningen, Holland, in September. Nineteen countries were represented by 418 delegates. The United States, represented by 14 delegates, participated in almost all of the technical meetings.

Accepting an invitation from the Yugoslav National Committee, the IEC decided to hold its 1953 meetings at Opatija on the Istrian Peninsula. These meetings will be scheduled for two weeks beginning June 22. The 1954 meetings will be in the United States to celebrate the Commission's Fiftieth Anniversary.

Among important actions taken this year at Scheveningen was authorization of a new technical committee to develop standards for electronic tubes. This work has heretofore been part of the duties of the Technical Committee on Radio. Organization of the new Committee recognizes the fact that the use of electronic tubes has now extended into a much broader field than radio alone. This follows the development of standardization in the United States. Holland was assigned the secretariat for the new committee.

A number of standards were completed and will be submitted to the national committees for approval. These included revision of the specifications on rotating electrical machinery; preferred standards for 50-cycle turbines and for 3000 rpm 3-phase 50-cycle turbine-type generators; a basic list of graphical symbols; a revised list of standard voltages; power losses and methods of expressing efficiency of electrical equipment; safety rules for amplifiers and loud speakers; several standards for radio components; temperature rise for circuit breakers, normal loading conditions; a revision of standards for power capacitors; dimensions of electronic tube bases and tube gages; and two specifications for high-voltage insulators.

The IEC Council, the Commission's governing body, and the Committee of Action, its executive committee, considered strengthening cooperative relations between IEC and other international organizations. Arrangements were made for extending cooperative action on standards of joint interest to IEC and the International Commission on Rules for the Approval of Electrical Equipment (CEE). This is a European organization developing safety rules for radio receivers, loudspeakers, amplifiers, television receivers, household appliances, wiring devices, and similar equipment. It is now extending its activities into other fields closely related to those covered by IEC. The rules adopted by CEE are used by European governments in inspection and approval of electrical equipment.

Closer coordination of IEC work with that of the International Organization for Standardization was also discussed.

A request from the Organization for European Economic Cooperation (OEEC) for the fastest possible progress on projects which OEEC believes would help in stimulating international trade was given serious consideration. These are in the field of light electrical equipment, including domestic appliances for room heating and cooking, protective devices for motors, medical appliances and x-ray apparatus for medical use, arc welding apparatus, measuring instruments, radio receivers, and interference suppression devices. In most cases there are now differences in standards used by different countries for these types of equipment. The request is being passed along to the secretariats for the projects in question and arrangements are being made for close liaison with OEEC in the future.

The volume of work handled by technical committees has increased so rapidly that the central offices of IEC find it difficult to meet the expense of translation, duplication, and distribution of documents. An attempt will be made for the present to meet the problem by asking the national committees to handle a larger amount of this work rather than increasing the scale of support. It is recognized, however, that this may cause difficulty in securing accurate translations of highly technical matter between French and English.

Suggestions for new work considered by the Committee of Action included expansion of the project in graphical symbols and increased activity on switchgears to include contactors, starters, bus bars, switchgear assemblies, and the like, both for low and high voltages, except for domestic installations. Work on electro-acoustics was re-vitalized and the secretariat of the technical committee transferred from the British National Committee to the Netherlands Electrotechnical Committee.

IEC technical committees reported their activities at the Scheveningen meetings as follows:

Nomenclature (TC 1)—

Progress is being made toward completion of the vast task of revising and expanding the International Electrotechnical Vocabulary published by IEC in 1938. Definitions are to be in English and French, with the terms themselves in six languages. The committee hopes to complete its task in 1954. An improved procedure to expedite the work was agreed upon during the meetings at Brussels immediately preceding the IEC meetings at Scheveningen.

Rotating Machinery (TC 2)—

Two draft specifications were com-

pleted by the technical committee. One was on rotating electrical machinery (a revision of IEC Publication 34), the other on preferred standards for 3,000 rpm 3-phase 50-cycle turbine-type generators. The new Publication 34 now covers rotating electrical machines of all types without limitation as to output or voltage, with the exception of machines for use on railway vehicles. The 1935 edition of Publication 34 which it revises also covered transformers. These are now taken care of by a separate technical committee, TC 4. The revisions incorporated in the standard comprise a complete review and modernization of the basic standards for rating and testing rotating electrical machinery.

The Subcommittee on Dimensions for Motors has reached agreement on height-to-center lines. The dimensions agreed on are very close to both European and American practice although shims will be required in order to correct the slight variation caused by differences in the metric and English systems of measurement. At the present time it has not been possible to reach agreement on other dimensions. Work is continuing, however. A report on the work to date is to be published.

The Subcommittee on Classification of Insulating Materials proposes to standardize a new class of insulation between the established classes A and B. The new class, to be designated Class E, will have an allowable temperature of 120 degrees centigrade. This is not in accordance with American views. The general feeling in Europe, however, is that more classes of insulation are needed in order to economize on materials by using every material at as high a temperature as it will stand.

A subcommittee dealing with power losses and methods of expressing efficiency agreed upon a draft which will be circulated for approval by the National Committees.

Graphical Symbols (TC 3)—

Recognizing that a general review of all previously published graphical symbols will require a great deal of work over a long period of time, the

(Continued on page 410)

The IEC Commission at Scheveningen

by Dr H. S. Osborne

The International Electrotechnical Commission is the medium through which representatives of the electrical industries and electrical science in the various countries of the world cooperate in the preparation of international recommendations for standards. These standards cover the range of electrical apparatus and systems, and include also electrical terms, units, and graphical symbols. The development of these standards through the voluntary action of electrical industry in the various countries is important in stimulation of international trade and in the development of a better understanding among those associated with the electrical arts and sciences.

The technical work of the IEC is carried out by technical committees, now 38 in number, each of which is assigned the task of developing standards in one branch of the subject. The record of their accomplishments is indicated on pages 408-411.

No report would be complete without a word of appreciation for the excellent arrangements made by the Netherlands Electrotechnical Committee and the delightful entertainment which they provided both for the delegates and the members of their families.

I also want to express appreciation to the American delegates for their excellent work. This appreciation extends to the numerous groups under ASA sectional committees and in the various branches of the electrical industry who did the large amount of preparatory work necessary to make possible the good work of the American delegates at the international meetings.

The rapid increase in the volume of work being done by the various IEC committees is indicative of the increasing importance of international standards in the stimulation of international trade and of the growth of international understanding in a complicated and rapidly developing art. The United States has shared in this growing interest in the work. The delegation to the meetings at Scheveningen this summer was the largest American delegation of recent years. In addition, American representatives have taken part in a number of the meetings of individual committees during the year.

The reactions of the U.S. delegates have been well summarized. Following are observations made by two of the delegates to this summer's meetings:

"1. There appears to be genuine interest in International Standardization. No delegate pushed too hard for his own standards. There was a wholesome spirit of cooperation. highly valued.

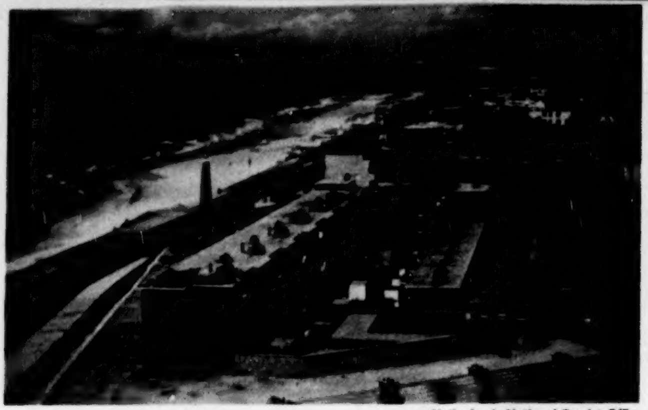
"3. The need to conserve material is more urgent in Europe than in USA and there is a tendency to work material harder and work closer to established limits, even at the expense of having more items in the stand-

"2. The opinion of the USA is ards.

"4. Gathering in meetings such as this accomplishes more than could be accomplished by correspondence. One gets to know the delegates from other countries and can better understand their viewpoint. For this reason it would be helpful if a delegate could attend such meetings for at least two successive years.

(Continued on page 422)

Dr Osborne, President of the United States National Committee, was unanimously elected President of the International Electrotechnical Commission at the meeting of the IEC Council, September 10. Dr Osborne succeeds Dr Max Schiesser, Director of Brown Bovari, Baden, Switzerland.



Netherlands National Tourist Office

Holland's leading seaside resort, Scheveningen, was the site of this year's IEC meetings. Hotels in which committees met overlooked seaside promenade.

(Continued from page 409)
committee concentrated on 80 basic graphical symbols in common use. Agreement was reached and the 80 symbols are being submitted to the national committees for approval.

The committee was given approval to widen its scope to include classification of circuit diagrams and statement of principles governing the use of symbols in different types of diagrams.

Steam Turbines (TC 5)—

A subcommittee completed work in connection with non-reheat turbines and 50-cycle reheat turbines. (This is complementary to work done by TC 2 on 50-cycle generators.) The proposed standard is now going to the National Committees for approval.

Standard Voltages (TC 8)—

A revision of the IEC list of standard voltages was agreed upon and will be submitted to the national committees. The most important item is the range of system voltages above 1,000 volts. Because of irreconcilable differences between European and American practice, two series are given for nominal system voltages below 60 kv—one representing European practice and the other, American practice. For voltages higher than the 60 kv, a single series of voltages was found acceptable.

The practical significance of the difference in voltages used in different countries is to be studied by a new subcommittee. The object of this subcommittee is to reduce the number of these different voltages.

Further work is to be done in standardization of voltages below 100 volts and also of system frequencies above 60 cycles per second.

Radio Communications (TC 12)—

This committee and its subcommittees met for more than a week.

Safety rules for amplifiers and loudspeakers, drafted by the Subcommittee on Safety, will be circulated to the National Committees for approval.

Safety rules for television receivers were given preliminary consideration.

A Subcommittee on Components completed several documents which will be circulated for approval. These include basic testing, procedure for climatic and mechanical robustness of components, specifications for fixed tubular paper capacitors, and a draft color code for ceramic capacitors. In addition, several group specifications for the guidance of the committee in preparing further standards were agreed upon. The committee made plans for a large program of future work.

A subcommittee on electronic tubes completed a specification for the dimensions of tube bases and gages. Considerable progress was made on

U. S. DELEGATES TO IEC MEETINGS SCHEVENINGEN, HOLLAND

IEC Council and Committee of Action

Dr H. S. Osborne (President, United States National Committee)

R. C. Sogge (Vice-President, USNC), Manager, Standards Division, General Electric Company, Schenectady, N. Y.

J. W. McNair (Secretary, USNC), Electrical Engineer, American Standards Association.

TC 2 and Subcommittees

M. Scott Hancock, Assistant to the Manager, Buffalo Division, Westinghouse Electric Corporation, Buffalo, N. Y.

P. C. Smith, Assistant to the Division Manager, Westinghouse Electric Corporation, East Pittsburgh, Pa.

TC 3

H. P. Westman, Editor, Electrical Communications, International Telephone & Telegraph Company; Chairman, ASA Drawing Symbols Correlating Committee.

TC 8

Dr C. F Wagner (Technical Advisor to USNC on TC 8), Westinghouse Electric Corporation, East Pittsburgh, Pa.

V. L. Cox (Technical Advisor to USNC on TC 17), Manager of Engineering, Switchgear Division, General Electric Company, Philadelphia, Pa.

TC 12 and Subcommittees

V. M. Graham (Technical Advisor to USNC on TC 12), Associate Director, Engineering Department RTMA, Sylvania Electric Products, Inc, Flushing, N. Y.; Chairman ASA Committee on Radio, C16; Chairman, Joint Electron Tube Engineering Council.

H. P. Westman (As aforementioned).

Leon Podolsky, Manager, Field Engineering Department, Sprague Electric Company, Pittsfield, Mass.

TC 15

E. F. Seaman, Electrical Engineer, Bureau of Ships, U. S. Navy Department, Washington, D. C.

Dr A. H. Scott, National Bureau of Standards, Washington 25, D. C.

TC 17

V. L. Cox (see TC 8).

M. H. Hobbs, Manager of Engineering, Switchgear Division, Westinghouse Electric Corporation, East Pittsburgh, Pa.

O. B. Vikoren, Engineer, Electrical Engineering Division, Philadelphia Electric Company, Philadelphia, Pa.

TC 22

L. W. Morton, Manager, Power Electronics Division, General Electric Company, Schenectady, N. Y.

TC 28

Dr C. F. Wagner (see TC 8).

TC 33

Leon Podolsky (see TC 12).

TC 35

Dr A. H. Scott (see TC 15).

TC 36

O. B. Vikoren (see TC 17).

systems for designating types of tubes. It was agreed to proceed further on the basis of the American system of tube designation after completion of revisions now under way. The increased use of electronic tubes in many fields was recognized by the IEC Committee of Action. It set up a new technical committee to develop standards in the entire field of electronic tubes, including radio tubes heretofore handled by Technical Committee 12.

Insulating Materials (TC 15)—

A considerable part of the work of this committee was in cooperation with the subcommittee on insulating materials of TC 2, Rotating Machinery. These two committees worked together on classification of insulating materials. The Committee of Action assigned to TC 15 the general study of classification of insulating materials. It was understood that committees dealing with specific types of apparatus, while using the work of TC 15 for guidance, are left at complete liberty to establish their own standards for insulation applying to the types of apparatus with which they are dealing.

TC 15 also gave consideration to essential apparatus and techniques for testing the electrical strength of insulating materials. It reached agreement regarding dimensions of test electrodes and related matters. Plans were made for the very large amount of future work which is in the field of this committee's activities.

Switchgear (TC 17)—

The section of the standards for Circuit Breakers dealing with temperature rise for normal loading conditions was completed and will be submitted to the National Committees for approval.

The standard on Rules for Short Circuit Conditions now being reviewed by the various National Committees will be published as soon as approval is received.

The Committee on Action approved the recommendation of TC 17 that its scope be extended to include switchgear assemblies, with the exception of equipment used for domestic and similar installations. This field is covered by Technical Committee 23, Electrical Accessories. A subcommittee was set up to start work in the new field being undertaken by the committee.

Electronic Devices (TC 22)—

In the interest of clarity, the Committee of Action changed the title of this committee to "Power Converter Equipment other than Rotary Converters and Motor Generator Sets."

Material progress was made at these meetings in the preparation of specifications for ionic converters. More work is necessary before the complete specification can be recommended. The committee hopes to continue this in a Spring meeting to be held either in Paris or London.

Coordination of Insulation (TC 28)—

Recommendations for the coordination of insulation in exposed locations on high-voltage a-c systems are being prepared. Excellent progress in this difficult and controversial subject was made during these meetings. The basic aim of the committee is to define such coordination of insulation as will avoid damage to electrical equipment due to over-voltages and limit unavoidable flash-overs to points where they will cause no damage.

Power Capacitors (TC 33)—

A number of suggestions from the U.S. were considered. These covered changes in draft specifications for shunt capacitors for power systems. These draft specifications have been in trial use. Revisions were made which incorporated most of the U.S. proposals. The revised draft was approved for circulation to all the National Committees for their approval.

Dry Cell Batteries (TC 35)—

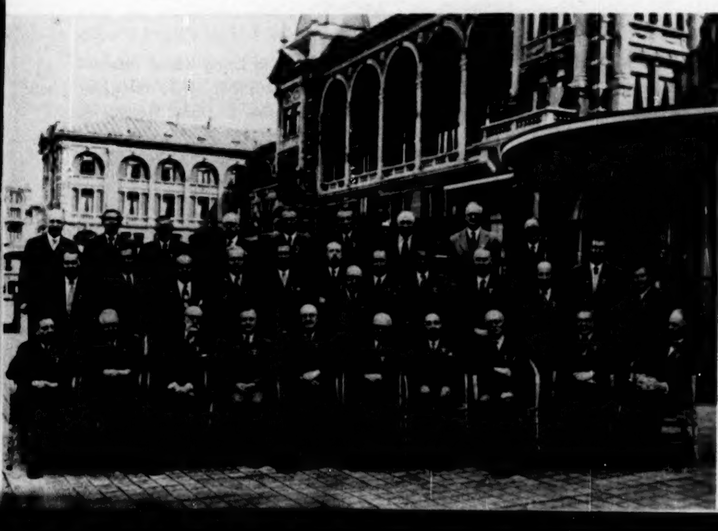
This committee made substantial progress in the development of standards for dry cell batteries, including definitions, dimensions and tolerances, conditions of test, and performance required under these tests. Further work is continuing.

High-Voltage Insulators (TC 36)—

Two specifications were completed. They will be submitted to the National Committees for approval. These were: International Specifications for Porcelain Insulation for Overhead Lines with a Nominal Voltage of 1,000 volts and Upward and International Specifications for Glass Insulators for Overhead Lines with a Nominal Voltage of 1,000 Volts and Upward.

There was considerable discussion of the utility of the sphere gap as a measuring device. It was agreed that the sphere gap tables should be kept up to date, but that other methods of measuring high voltages also should be studied.

1952 IEC Committee of Action. **See page 423 for identification.**



Iron Age Asks—
"Standards: Can They Be a Curse?" Proves U. S. Industry Needs ISO

How *Iron Age* Pointed with Alarm—(Quotation from *Iron Age*, Oct. 2, 1952)

Standards in overseas countries have been multiplying like rabbits. This would be fine if the standards were uniform—but standards differ from country to country. It's estimated that 34 countries have issued standards for about 41,000 products and parts.

Exporting manufacturers abroad have been keeping themselves relatively free of trouble with standards by keying their specs to standards of a few market areas. These did not differ widely.

Now a new trend is shaping. Former buyers are industrializing and with new industry new standards are evolving. Many countries have set up Standards Institutes. This becomes a matter of little concern if countries set up standards for products in sufficient amounts without recourse to imports. But when differing domestic standards are applied to the imported product then confusion and waste sets in.

In Portugal, for example, standards demand a typewriter with an unusual keyboard. Foreign producers who wish to sell to Portugal must build a special typewriter.

Setting up of private standards can also become a trade weapon to protect a young home industry or a method to wrest discounts from exporting firms.

If imported goods do not meet a nation's standards, they can be returned. If misused, this is perhaps more effective than a high tariff wall and it has the advantages of ostensibly preserving trade agreements. Use of the rejection-through-standards device also permits a country to get imported goods at a discount when the claim is entered that domestic standards have not been met. All this depends on whether a buyer's or a seller's market exists.

For instance, a backward country, recently returning to industry, set up a standard for mild steel wire, setting up mechanical properties, content, weight, etc. The government and any merchant can reject imported wire for failing to meet standards.

While the government rejection may be completely ethical, the merchant's may be motivated by profit. If prices are falling and the market is "against" him he can call for a standards check and it's almost a sure bet he will catch the producing firm in some sort of violation.

Succeeding in this, the merchant is in a position to talk discount. If the producing firm does not grant a sizeable discount it must re-transport the shipment back to the home port and then re-sell it. If the product was made to conform to standards of a certain nation it may be difficult to dispose of to importers of other lands.

A Belgian shipper recently shipped some 400 tons of mild steel wire, cold-drawn to an Asian country with its own set of standards. There was a slight deviation in the carbon content of the steel. The ultimatum to the exporter was 20 percent discount or no sale. The dispute was settled at 10 percent off. And the exporter considered himself fortunate—for that steel wire had been made to standards differing from European and English.

Standards are designed to eradicate wasteful manufacturing practices. Yet establishing country-by-country standards may do just the opposite. It can lower economic production by forcing exporting industries to produce a variety of essentially similar products. It also becomes a weapon for trade nationalism.

What Cyril Ainsworth Has Said About U. S. Industry's Role—

There are bound to be differences in industrial practices, material specifications, and manufactured products between nations, just as there are differences in custom, language, and currency.

The Council of the International Organization for Standardization keeps work moving smoothly to bring about international uniformity of national standards. The meeting shown here took place in New York, June 1952. U.S. delegates are Cyril Ainsworth (second from left, facing camera) and ASA's Managing Director, G. F. Hussey, Jr (third from left).

Gene Dauber

Probably the American example of how standards pay off has had much to do with other countries following in our footsteps.

Goods bought and sold on standards and specifications, whether on the domestic or international markets, will always be subject to possible discount if the product differs from the specifications of the order. Standardization as a common language between buyer and seller helps eliminate situations where either a return of goods or a discount would be required because of failure to meet specifications.

While standards are not a substitute for salesmanship, they are of great importance in the marketing process.

They enable buyer and seller to know whether they are talking about the same thing.

They inspire confidence for the producer to secure loans or bank credit to finance his operations.

They promote fairness in competition in domestic and foreign trade.

They prevent misunderstandings, trade disputes, and litigation by helping to insure "good delivery."

They stimulate improvement of product.

They are essential to large, stable markets, which cannot exist without them.

At meetings of technical committees of the International Organization for Standardization in New York last June, American representatives attended a number of meetings of committees on which the USA has only an observer status. In some cases complaints had been received that specifications were being written to keep American goods out of the foreign market. Representatives at these meetings found no justification for this complaint. They found that some of the technical requirements did not conform to practices in this country, it is true. This had occurred, however, because United States representatives had not been present at meetings of the committee when these points were considered. Absence of American representation had prevented consideration of American practices.

Good Blanks Make Good Gears

"Good gears start with good blanks," says Louis D. Martin, gear consultant of Rochester, New York. In a challenging article in *Machine Design*, October 1952, Mr Martin points out some of the problems of gear blank design and suggests that reference to two American Standards would help in solving them.

The design and quality of a gear blank determine the accuracy and performance of the finished gear, Mr Martin points out. However, in instrument gearing, particularly designers lack understanding of manufacturing difficulties. As a result, many gears have been designed without consideration of manufacturing problems. For example, very close tolerances are often specified for the finished gear that are impossible to satisfy because of the design of the gear blanks.

As a guide to good gear-blank construction, Mr Martin points to Section Seven of the American Standard Inspection of Fine-Pitch Gears, B6.11-1951. Here tolerances are set up for various gear-blank elements to produce finished gears of given degrees of accuracy.

"The tolerances given in this standard are realistic and liberal," Mr Martin says. "If the principles set forth in this standard are followed, much better blanks will result."

The American Standard Design for Fine-Pitch Worm Gearing, B6.9-1950, also contains recommendations for gear blank design. It offers two choices, one for throated worm gears, the other for non-throated gears.

Commenting on throated and non-throated gear blanks, Mr Martin declares:

"The fallacy in using a fully throated blank, especially in instrument gears, is that it is never possible to produce fine-pitch worm gears that fully envelope the worms. This is due to the limitations in the generating equipment available for this type of gear.

"Fine-pitch worm gears are produced by the in-feed method of generating, in which the hob is larger than the mating worm by a suitable sharpening allowance which has been more or less standardized. The lead angle of the hob is different from that of the worm and continually changes as the hob diameter changes by sharpening. To compensate for this, it is common practice to adjust the hob axis slightly from the 90-degree relation with the axis of the work spindle. It is not generally appreciated that a change in the center distance between a worm and worm gear changes conjugate action. The amount of change depends on many factors such as: axial pitch, lead angle, depth of cut, and pressure angle.

"The equipment for producing fine-pitch worm gears by the in-feed method does not have facilities for maintaining constant center distance like tangential-feed worm-gear hobbing machines used for coarse-pitch gears. Size is obtained by varying the center distance and endeavoring to correct for bias bearing by changing the hob axis. Fully conjugate contact is therefore impossible. Furthermore, it is useless to design a complicated blank in an endeavor to obtain maximum contact when the limitations of the process are the governing factor.

"The committee that developed the fine-pitch inspection standard must have recognized these limitations because, in the section on inspection of fine-pitch worm gears, under Item 78, 'Required Initial Area of Contact,' is stated, 'A minimum of 50 percent contact is suitable for most fine-pitch worm gears.'"

Mr Martin's article includes examples of questionable gear blank construction taken from current instrument gear production.

The Case of the One-Inch Saving

by Paul Arnold

From Mr Arnold's paper "How the Photographic Industry Developed National Standards and How Both Industry and Consumers Benefited," presented at the National Standardization Conference, September 9, 1952.

FOR many years the most popular size of roll film was the 2¼ x 3¼-inch picture size, variously known as the 120, B-2, G-20, and S-20, among other designations.

In the course of time, European camera designers stretched the picture to 6 x 9 cm (approximately 2.36 x 3.54 inches). This would fit on the film but with considerable reduction of the margins between pictures. Then the eight 6 x 9 cm pictures were divided to make 12 pictures 6 x 6 cm or 16 pictures 4.5 x 6 cm (approximately 1.59 x 2.36 inches). This further reduced the margins between successive pictures. Finally, cameras with automatic film advances were introduced; and some of these cameras did not space the pictures correctly.

Film manufacturers began to get complaints that their films were too short. The last picture ran off the end of the film. This happened in most cases because the preceding pictures were spaced too far apart by the automatic and semi-automatic film advance mechanism.

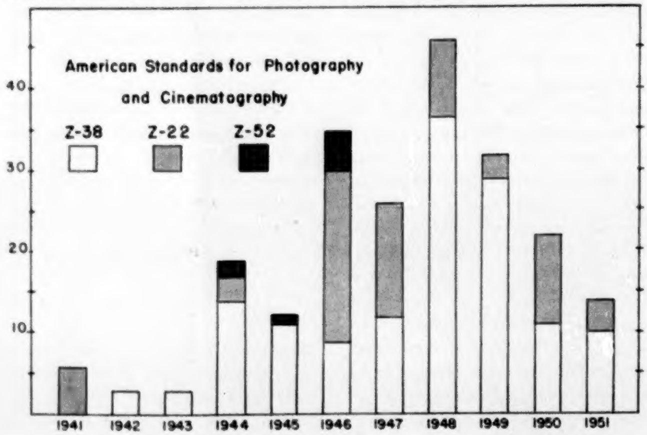
The film manufacturers added more film to take care of the complaints. They did this for a small number of European-made cameras with oversize 6 x 9 cm picture apertures and an even smaller number of inaccurately-spacing automatic winding mechanisms. They increased the length of the film, without changing the price, despite the fact that films of the old length operated perfectly in American-made cameras. They did it for the simple reason that the man who pays $200 or $300 for a camera made in Europe refuses to believe that the expensive camera is at fault rather than the 30-cent film.

When the "thin spool" 620 and 616 film sizes were introduced manufacturers at first used the same film lengths as they had for the old 120 and 116 film sizes. Production engineers of the film manufacturers who worked on standards committees became aware, however, of the savings that could be made if the 620 thin spool film were reduced to the 2¼ x 3¼-inch film length. No European cameras had ever been made for 6 x 9 cm pictures on size 620 film. When American Standard dimensions for amateur roll films were set up in 1943 (and revised in 1950) they restricted 620 films to a maximum of 2¼ x 3¼-inch picture size and warned all future camera designers about the standard dimensions.

The saving in film amounts to about 4 percent of the total film strip. This little piece of film, only about an inch long, may not seem to be an important saving. But the amateur roll film business is an $80 million a year business over the retail counter. The 620 "thin spool" size is the fastest growing size. About 82 million rolls of that size were manufactured last year and one inch of film saved on each roll means an annual saving to the industry of over $158,000.

This is a saving that no film manufacturer would dare take advantage of in a competitive market by changing his own manufacturing practice unilaterally. With the assurance of a national consensus that an American Standard implies, however, all the film manufacturers could eliminate an expensive waste with the guaranteed assurance that the best interests of the producers, the distributors, and the consumers alike are being served.

Distribution of 218 American Standards in the Field of Photography listed in the May 1952 ASA price list. The years represent the date of approval of standards developed by (1) Sectional Committee Z38 on Photography, (2) Sectional Committee Z22 on Motion Pictures, and (3) Sectional Committee Z52, the War Emergency Sectional Committee which dealt with both motion picture and general photographic standards. Committees Z38 and Z22 have now been reorganized into committees PH 1, 2, 3, and 4, and PH 22.



***Mr Arnold is assistant to the Technical Director and Standards Coordinator, Ansco Division, General Aniline and Film Corporation, Binghamton, New York. He is at present chairman of both the Photographic Standards (Correlating) Committee and of the Sectional Committee on Photographic Films, Plates, and Papers and editor of* Photographic Science and Technique.**

International Progress on Colorfastness Tests

An impressive degree of international agreement was reached on colorfastness tests for textiles at meetings held in the offices of the American Standards Association November 10-12. Representatives from Canada, France, Germany, Switzerland, United Kingdom, and USA were present. They are members of a subcommittee on colorfastness set up by the Technical Committee on Textiles of the International Organization for Standardization.

Agreement was reached on general principles that apply to all colorfastness tests as well as on a number of specific test procedures.

The problem before the subcommittee concerns, on the one hand, fastness of fabric dyes to processing treatments and, on the other hand, fastness of dyes when fabrics are in use. Tests on which complete agreement was reached, most of which fall into the first category, include colorfastness of textiles to water, water spotting, sea water, rubbing, acid spotting, alkali spotting, carbonizing, peroxide bleaching, potting, mercerizing, stoving, soda oiling, chlorination, chrome in the dye bath, metals in the dye bath, and hypochlorite bleaching.

As a means of rating the magnitude of change in the color of a fabric after test, two "gray scales" were agreed on. One provides five shades of gray for rating the degree of color loss. The other provides five samples of white combined with gray. This is used for rating the amount of color that bleeds onto white material from a colored fabric.

A method for hand washing was also agreed on; however, a test method for colorfastness to severe washing is to be given further consideration.

Both daylight and machine methods were considered for testing colorfastness to light. A daylight method was agreed on, but a carbon arc method is being held over for further consideration. Agreement could not be reached at this time because only in America are machine methods widely used.

Proposed methods for testing colorfastness to perspiration and cross dyeing were held over for further consideration. Dr Perry W. Cunliffe, Society of Dyers and Colorists of Yorkshire, England, member of the British delegation, explained that a British committee has been carrying out investigations on the composition of perspiration to determine why no existing test always gives the same results. This research has shown that natural perspiration contains compounds that have not been taken into consideration in artificial liquids used in the perspiration tests. Histamine, Dr Cunliffe explained, is the principal compound discovered to date. For satisfactory test results, this compound, and any others that may be discovered, will be introduced into artificial test liquids to give the same results as natural perspiration.

"This committee is not attempting to say how colorfast a material should be for any purpose," Dr W. D. Appel, National Bureau of Standards, declared. Dr Appel acted as chairman of the meeting. "We are setting up yardsticks for testing colorfastness and for rating the degree of colorfastness, and are trying to arrive at a common language for international use based on clearly defined test methods," he said. This is particularly important because more and more

(*Continued on page* 417)

Code for Gas Pipelines Published

A safety code for gas pipe lines and distribution systems—covering material, design, fabrication, installation, testing, and operation—has been approved by the American Standards Association. This document is a new Section 8 of the American Standard Code for Pressure Piping, B31.1-1951. Designated as B31.1c-1952, it is a consolidation of those parts of the existing Code for Pressure Piping that pertain to gas piping.

Section 8 is being published separately to serve as a guide in the construction of pipe lines for gas transmission and distribution. The need for such a guide has been emphasized recently because of current activity in construction of cross-country gas pipe lines. This separate publication eliminates the necessity for cross-referencing to other sections of the code. Technical requirements are identical with those in the code. In future editions of the Code for Pressure Piping they will be included as the last section.

Chairman of the subcommittee which consolidated the new section is Frederic A. Hough, vice-president, Southern Counties Gas Company of California, Los Angeles. Subcommittee No. 8 has a membership of 52 representatives of gas transmission and gas distribution companies; pipe companies; valve and fitting companies; independent research groups; technical universities; consulting engineers; and government agencies.

The new standard has chapters dealing with piping components, pipe joints, fabrication details, and requirements after installation, and the final chapter consists of tables and illustrations.

In developing section 8 for separate publication, the subcommittee reviewed specifications and codes already formulated or in the process of preparation by other agencies, and drew upon the resources of the technical groups represented in its membership. The major consideration of the group was public safety.

Sponsoring organization for Section 8, as for the code itself, is the American Society of Mechanical Engineers.

Standards From Other Countries

Members of the American Standards Association may borrow from the ASA Library copies of any of the following standards recently received from other countries. Orders may also be sent to the country of origin through the ASA office. The titles of the standards are given here in English, but the documents themselves are in the language of the country from which they were received. For the convenience of our readers, the standards are listed under their general UDC classifications.

621.3 Electrical Engineering

Australia — ***A.S.***

Approval and test specification for insulating panels (including composition boards and synthetic resin-bonded sheets for switchboard panels) C.108-1951 Ap

Approval and test specification for plugs and plug-sockets (type A plugs with male contacts, sockets with female contacts) C.112-1951 Ap

Approval and test specification for cord extension sockets C.120-1951 Ap

Flexible trailing cables for electric lifts C.307-1952

Flexible cords for miners' cap lamps C.309-1952

Belgium — ***NBN***

Rules for instrument transformers 134

Rules for electric cables, paper insulated and lead covered for high tension 20-70 kva 259

Recommendations relative to the use of capacitors for the improvement of the power factor of the network 260

Canada — ***CSA***

Construction and test of fuses (both plug and cartridge-enclosed types) C22.2 No. 59-1952

Finland — ***SFS***

Name plate for electric stoves C.III.3

Hotplate under 2500 w C.III.5

France — ***NF***

Testing of plastic material used in electric constructions C46

Germany — ***DIN***

Insulating fabric sleeves, type A 40620, b.1, 2

Insulating sleeves, plastic, type B 40621, b.1, 2

Table showing standard current ratings for switch gears below and over 1000v 43626

Electric-indicating instruments used in connection with thermo-electric apparatus, etc 43709

Standard reels for bare and insulated wires 46390

Ceramic wall bushing, group B, series 30 48105, b.2

Different sleeve sockets 49360, b.3

India — ***IS***

Method of making switchgear bus-bars, etc 375

Mexico — ***DGN***

Fittings for electrical conduits J 17

Electric switches, knife type J 18

Electric bulbs for general use J 19

Netherlands — ***N***

Freight elevators. Safety code N 1082

United Kingdom — ***BS***

Synthetic-resin bonded-paper insulating tubes (rectangular cross-section) for electrical power circuits up to 1000 volts 1885:1952

621.64 Devices for Conveyance and Storage of Gases and Liquids in General

Australia — ***A.S.***

Low carbon steel cylinders for the storage and transport of medium-pressure liquefiable gases B.12-1952

France — ***NF***

Plugs, expansible type E 29-584

Unions, types "bi-conical" E 29-601

Three standards for butane gas cylinders under pressure of 11, 13 and 35 kg M 88-701, -702, -703

Israel — ***SI***

Pipe flanges 60

Netherlands — ***V***

Pumps for liquids. Nomenclature and symbols V 959

South Africa — ***SABS***

Specification for seamless steel cylinders for high pressure gases 50-1951

Specification for seamless steel cylinders for low pressure gases 51-1951

Specification for welded or brazed steel cylinders for low pressure gases 219-1951

Specification for steel cylinders for dissolved compressed acetylene contained in a porous substance 220-1951

Specification for multi-trip mild steel drums for flammable liquids 224-1951

621.74 Foundry Works

Czechoslovakia — ***CSN***

Molding forms 04-4011

Union of Soviet Socialist Republics — ***GOST***

Foundry molding sands. Sampling and testing 2189-52

United Kingdom — ***BS***

Dimensions of foundry molding boxes 1889:1952

624 Civil Engineering

Austria — ***ÖNORM***

General notes on calculation and building of solid concrete structures B 4200, pt.3

Germany — ***DIN***

Rules for determination of stability of steel structures 4114

Thermal insulation of buildings 4108

Street and road bridges: admissible loads 1072

Specifications for concrete for reinforced concrete structures 1045

Israel — ***SI***

Nomenclature of storeys 66/1

629.12 Ships and Shipbuilding

France — ***NF***

Eighteen standards for different type ship-deck stanchions and their accessories J 32-100, -105, -115, -125, -135, -140, -145, -147, -150, -151, -160, -165, -166, -210, -216, -222, -228, -120

Germany — ***DIN***

Deck screws, from A and B, M 10-M 16 80441

Eye nuts, metric, M 12-M 27 80704

Pipes for shipbuilding up to ND 40 (nominal pressure 40), general table 86006, b.1

Seamless drawn copper pipes up to ND 40 and 225°C 86007

Seamless steel pipes up to ND 40 86008

Welded steel pipes up to ND 6 86010

Hard-lead pipes up to ND 10 and 80°C 86011

Eleven standards for different types of marine flanges for steel and copper pipes 86020-86022, 86024, 86031-86035, 86041, 86043

664 Preparation and Preservation of Solid Foodstuff

China — ***CNS***

Cane sugar, specifications 206(K69)

Finland — ***SFS***

Eight standards for different preserved fruit juices V 76-001 thru V 76-008

Ireland — ***Irish Standards***

Pickled herrings 35:1951

Israel — ***SI***

Baking flour (wheat and rye) 46

Canned green peas 56

Cucumber preserves 58

Mexico — ***DGN***

Mayonnaise F 21

Mayonnaise-type sauce F 22

Edible pastes F 23

Glucose of corn R 19

Tomato paste F 25

Dried milk F 26

South Africa — ***SABS***

Specification for canned celery soup 276-1950

669 Metallurgy

Germany — ***DIN***

Zinc sheets and bands 9721/2

Boiler plates, supplementary specifications 17155, bb.

Seamless steel pipes with guaranteed heat-resistance properties, supplementary specifications	17175, bb.
Tempering steel, supplementary specifications	17200, bb.
Heat-resisting steel castings, supplementary specs.	17245, bb.
Impact testing of steel and steel castings	50115
Creep test of steel and steel castings according to the DVM method (DVM = German Society for Testing Materials	50117
Tensile test of metals	50145
Testing of magnetic powders	54121
India	***TS***
Manganese ore of battery grade	372
Spain	***UNE***
Standard I beams	36521
Standard channels	36522

677 Textile Industry

Australia	***AS***
Shrink-resistance of plain knitted underwear composed wholly or partly of wool	A.S.No. L.2-1952
Germany	***DIN***
Hemp yarn	60100
Mexico	***DGN***
Gauze, absorbent, non-sterile	A 21
Netherlands	***N***
Determination of tensile strength and elongation of fabrics	N 948
Three sizes of flyer bobbins 8, 10 and 12 in.	1216, 1217, 1218
Skewers	1219

696 Plumbing Equipment

Australia	***A.S.***
Plugs for basins, baths, sinks and concrete wash-troughs	A.S. No. A.75-1952
Corrosion-resistant alloy fittings for use in sanitary plumbing installations	A.S. No. A.74-1952
Netherlands	***(Temporary) V***
Rules for gas installation	V 1078
United Kingdom	***BS***
Cast manhole covers, road gully gratings and frames for drainage purposes	497:1952
Automatic flushing cisterns for urinals	1876:1952

Colorfastness Tests

(*Continued from page* 415)

textiles are carrying labels for the information of consumer purchasers, Dr Appel explained. Laboratories in retail stores in which such merchandise is sold, as well as commercial testing laboratories, need recognized standard tests, he declared.

The meeting of Subcommittee 1 on Colorfastness was held in November in order that individuals visiting the United States from other countries could attend the annual meeting of the American Association of Textile Chemists and Colorists in Boston the previous week. In the United States both AATCC and the American Society for Testing Materials have committees working on textile test methods. They work in close cooperation, and both coordinate their activities through the American Standards Association. ASA is the U. S. member of the Subcommittee on Colorfastness and shares the secretariat for that committee with the British Standards Institution.

The agreements reached by Subcommittee 1 will now be presented in draft form to the 15 national standards bodies that are members of the subcommittee. It is expected that the next meeting will be held next year.

In the meantime, however, exchange of views in subcommittee meetings and circulation of subcommittee documents is bringing about unification of test methods in the various countries even as the work is going forward.

Book Reviews

Normalizacion. By Antonio Gonzalez de Guzman. 427 pp. Cloth bound. (Instituto Nacional de Racionalizacion del Trabajo, Madrid, Spain. 150 pesetas [$3.90])

This new Spanish book is both a primer on standardization and a guide to national and international standards organizations. The author is the General Secretary of the Spanish national standards body (Instituto Nacional de Racionalizacion del Trabajo) and a professor at the Special School of Naval Engineers.

The contents of the book can be divided into three parts.

(1) One-fourth of the book is devoted to general principles of standardization, description of different types of standards—dimensional, quality, safety; their character, whether company, national, international; and their status, whether voluntary or mandatory, for example.

Methods of application of standards in various fields of industry and the benefits derived therefrom are illustrated by references to the practices adopted by large industrial corporations.

The history and the background of the present setup of the Spanish standards body, which dates from 1946, is told briefly but comprehensively.

(2) The second fourth of the book lists alphabetically all other national standards bodies the world over, with their addresses and the names of their leaders. Brief descriptions of the activity of each are also included.

(3) At least half of the book is devoted exclusively to the International Organization for Standardization (ISO). The reader will find there a list of all the ISO projects, technical committees handling them, and the names of the countries holding the secretariats, as well as the scope and a brief description of the status of work of each ISO committee and sub-committee.

Normalizacion is written, of course, in Spanish. If other member-bodies of ISO should follow the example of one of their youngest colleagues (Spain was made a member of ISO in 1951) and publish in their respective languages similar simple and comprehensive works, standardization would be more easily understood by the layman.

The author of this excellent book should be congratulated and thanked for his achievement in popularizing the standardization program.

—*Review by E. Somoff*

Manual of ASTM Standards on Refractory Materials. (American Society for Testing Materials, 1916 Race Street, Philadelphia 3, Pa., 304 pp. Heavy paper cover $3.00; cloth cover $3.65.)

This 1952 edition (superseding the '48 edition) brings together in their latest approved form 37 ASTM standard and tentative specifications, classifications, test methods, and definitions pertaining to refractories.

Sponsored by ASTM Committee C-8 on Refractories, this publication includes other information on testing and use of refractories not in the category of ASTM standards, such as a suggested procedure for calculating heat losses through furnace walls; suggested practice for use with ASTM panel spalling tests; suggested petrographic techniques; standard samples for chemical analysis and pyrometric cone equivalent determinations; and 12 industrial surveys of refractory service conditions.

New material includes methods of test for modulus of rupture and for permanent linear change on firing of castable refractories; a proposed test method for disintegration of fireclay refractories in an atmosphere of carbon monoxide; a survey of refractory service conditions in the incineration of refuse; and a very extensive proposed glossary of terms relating to refractories, their manufacture and use.

Pump Replacement Made Easy

by A. William Meyer

Among the new American Standards recently issued is B5.28-1952 directed to the Mounting Dimensions of Lubricating and Coolant Pumps.

This is a standard which should prove beneficial to pump manufacturers, motor manufacturers, and users of machine tools.

Work on the development of this standard was started at the request of the National Machine Tool Builders Association and the American Society of Mechanical Engineers. In addition, it is also sponsored by the Metal Cutting Tool Institute and the Society of Automotive Engineers.

The pumps involved include those having motor drives where the motor mounting serves as the pump mounting, as well as pumps that are mounted on their own bases. It was necessary to work out this standard in cooperation with the National Electrical Manufacturers Association. A Task Committee was appointed for the purpose.

The standard aims at interchangeability of mounting dimensions which would permit the quick and easy replacement of a pump, or pump and motor unit, as the case may be, with the minimum of difficulty. The location of mounting holes, size of mounting holes, and various dimensions of concern where interferences might prove embarrassing have all been brought into uniformity. No attempt has been made to standardize the location of pipe inlet or outlet connections or the size and pipe threading used. These are considered to be rather flexible. Were too many details to be dictated, it would tend to be detrimental to the future development of both motors and pumps, it was thought.

A rather extended study of the practice of some 16 motor manufacturers in this country indicated that most of them comply with the new standard dimensions and the general tendency of others seems to be in the direction indicated by the standard.

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Production Engineering and Management

"To tell yuh the truth it ain't any particular make—it's mongrel."

The standard as published is a beginning, and should be widely acceptable. Perhaps in future years the standard can be enlarged without interfering with improvements in pumps or motors art.

Note: Mr Meyer is Director of Design at the Brown & Sharpe Manufacturing Company. He is chairman of Technical Committee 26 of Sectional Committee B5 on Small Tools and Machine Tool Elements. Members of Technical Committee 26 are:

V. A. Brunson, Chief Engineer, Blackmer Pump Company, Grand Rapids, Michigan

E. J. Miller, Chief Engineer, Tuthill Pump Company, Chicago, Illinois

G. F. Habach, Chief Engineer, Harrison Works, Worthington Pump & Machinery Corporation, Harrison, New Jersey

M. B. Sennet, Chief Engineer, Standard Products Development, DeLaval Steam Turbine Company, Trenton, New Jersey

Z. C. Van Schwartz, Administrative Mechanical Engineer, Hamilton Works, Baldwin-Lima-Hamilton Corporation, Hamilton, Ohio

W. H. Wood, Engineering Department, Norton Company, Worcester, Massachusetts

F. W. Smith, Robbins and Myers, Inc, was chairman of the Task Committee that did the original work on this new standard. Other members were G. W. Duncan, The Ohio Electric Manufacturing Company, and C. P. Anderson, Wagner Electric Corporation.

Meter Standard on Trial

Comments are invited on new proposed standard specifications for meters used to measure television and radio noise at both medium and very high frequencies. The proposed specifications will make it possible to develop meters of uniform characteristics for measuring radio noise to which radio and television equipment will be subjected when operating in the range of 20 to 1000 megacycles per second.

These meters will be used both in the factory and in the field. One important function will be to check noise levels and available television and radio signals at proposed receiver locations. They will also be employed for testing many types of equipment used by the Armed Services.

Only recently the highest radio frequency utilized for communication purposes was about 250 megacycles per second. However, the picture has changed with unprecedented speed, bringing television, for example, from a laboratory experiment to a household necessity within the short space of ten years. The Radio-Television Manufacturers Association, foreseeing the need for high frequency noise meters, constructed several instruments while television was still under development. Instruments in this high frequency range have also been developed under contract with the Armed Forces. Several meters having most of the features specified are now available commercially. Completion of these standard specifications has helped to clarify the needs of the user organizations and to iron out problems of manufacture. It is expected that acceptance of the specifications will insure that the meters built according to them will have uniform characteristics.

The proposed standard specifications for noise meters in the ultra high frequencies supplements the proposed American Standard Speci-

(*Continued on page* 423)

AMERICAN STANDARDS

Status as of November 18, 1952

Standards Council — Approval by Standards Council is final approval as American Standard; usually requires 4 weeks

Board of Review—Acts for Standards Council and gives final approval as American Standard; action usually requires 2 weeks

Correlating Committees — Approve standards to send to Standards Council or Board of Review for final action; approval usually takes 4 weeks

Building

In Correlating Committee—

Concrete Building Brick, Specifications for, ASTM C55-52; ASA A75.1 (Revision of ASTM C55-37; ASA A75.1-1942)

Structural Clay Load-Bearing Wall Tile, Specifications for, ASTM C34-52; ASA A74.1 (Revision of ASTM C34-50; ASA A74.1-1951)

Structural Clay Non-Load-Bearing Tile, Specifications for, ASTM C56-52; ASA A76.1 (Revision of ASTM C56-50; ASA A76.1-1951)

Solid Load-Bearing Concrete Masonry Units, Specifications for, ASTM C145-52; ASA A81.1 (Revision of ASTM C145-40; ASA A81.1-1942)

Methods of Sampling and Testing Concrete Masonry Units, ASTM C140-52; ASA A84.1 (Revision of ASTM C140-39; ASA A84.1-1942)

Methods of Sampling and Testing Structural Clay Tile, ASTM C112-52; ASA A83.1 (Revision of ASTM C112-36; ASA A83.1-1942)

Structural Clay Floor Tile, Specifications for, ASTM C57-52; ASA A77.1 (Revision of ASTM C57-50; ASA A77.1-1951)

Methods of Testing Gypsum and Gypsum Products, ASTM C26-52; ASA A70.1 (Revision of ASTM C26-50; ASA A70.1-1951)

Gypsum Sheathing Board, Specifications for, ASTM C79-52; ASA A68.1 (Revision of ASTM C79-50; ASA A68.1-1951)

Gypsum Wall Board, Specifications for, ASTM C36-52; ASA A69.1 (Revision of ASTM C36-50; ASA A69.1-1951)

Sponsor: American Society for Testing Materials

Standards Submitted—

Hollow Load-Bearing Concrete Masonry Units, Specifications for, ASTM C90-52; ASA A79.1 (Revision of ASTM C90-44; ASA A79.1-1944)

Hollow Non-Load-Bearing Concrete Masonry Units, Specifications for, ASTM C129-52; ASA A80.1 (Revision of ASTM C129-39; ASA A80.1-1942)

Sponsor: American Society for Testing Materials

Electrical

Standards Published—

Industrial Lighting, American Standard Practice for, A11.1-1952 $0.50

Sponsor: Illuminating Engineering Society

Laminated Thermosetting Products, Standards for, C59.16-1951 $1.00 (NEMA Pub LP1-1951)

Sponsor: American Society for Testing Materials

American Standards Approved—

Rubber Insulating Tape, Specifications for, ASTM D119-48T; ASA C59.6-1952 (Revision of ASTM D119-38; ASA C59.6-1939)

Method of Test for Dielectric Strength of Insulating Oil of Petroleum Origin, ASTM D877-49; ASA C59.19-1952

Vulcanized Fiber, C59.20-1952 (Revision of C59.20-1949; NEMA VU1-1949)

Gage for Electron Tube Bases, ASA C60.7-1952; (RTMA ET 106A; NEMA Pub 503A)

In Board of Review—

Laminated Thermosetting Products, C59.16 (Revision of C59.16-1951; NEMA 46-118)

Sponsor: American Society for Testing Materials

Standards submitted—

Transformers, regulators, and reactors, Terminology for, C57.10 (Revision of C57.10-1948)

Transformers, regulators, and reactors, General requirements for, C57.11 (Revision of C57.11-1948)

Instrument Transformers, C57.13 (Revision of C57.13-1948)

Loading and Operation of Instrument Transformers, Guide for, C57.33 (Revision of C57.33-1948)

Sponsor: Electrical Standards Committee

Ferrous Materials and Metallurgy

In Correlating Committee—

Malleable Iron Castings, Specifications for, G48.1 (Revision of ASTM A47-48; ASA G48.1-1949)

Sponsor: American Society for Testing Materials

Fuels

In Correlating Committee—

Definition of Terms, Gross Calorific Value and Net Calorific Value of Fuels, ASTM D407-44; ASA Z67.1

Method of Test for Calorific Value of Gaseous Fuels by Water Flow Calorimeter (ASTM D900-48; ASA Z68.1)

Sponsor: American Society for Testing Materials

Gas Burning Appliances

American Standards Published—

Central Heating Gas Appliances, Approval Requirements for, Volume II, Z21.13.2a-1952 $0.50

Automatic Valves for Gas Appliances, Listing Requirements for, Z21.21-1952 $1.00

Sponsor: American Gas Association

Reaffirmation Approved—

Approval Requirements for Dual Oven Type Combination Gas Ranges, Z21.37-1948, R1952

Listing Requirements for Domestic Gas Conversion Burners, Z21.17-1949, R1952

Listing Requirements for Gas Valves, Z21.15-1944, and Z21.15a-1949, R1952

Approval Requirements for Hot Plates and Laundry Stoves, Z21.9-1948, and Z21.9a-1949 R1952

Requirements for Installation of Domestic Gas Conversion Burners, Z21.8-1948, R1952

Approval Requirements for Domestic Gas-Fired Incinerators, Z21.6-1949, R1952

Listing Requirements on Gas Hose for Portable Gas Appliances, Z21.2-1949

Sponsor: American Gas Association

Materials and Products

In Correlating Committee—

Free-Cutting Brass Rod and Bar for Use in Screw Machines, H8.1 (Revision of ASTM B16-49; ASA H8.1-1949)

Seamless Copper Pipe, Standard Sizes, Specifications for, ASTM B42-51; ASA H26.1 (Revision of ASTM B42-49; ASA H26.1-1949)

Seamless Red Brass Pipe, Standard Sizes, Specifications for, ASTM B43-51; ASA H27.1 (Revision of ASTM B43-49; ASA H27.1-1949)

Seamless Copper Water Tube, Specifications for, ASTM B88-51; ASA H23.1 (Revision of ASTM B88-50; ASA H23.1-1949)

Copper-Silicon Alloy Wire for General Purposes, Specifications for, ASTM B99-51; ASA H30.1 (Revision of ASTM B99-49; ASA H30.1-1949)

Copper and Copper-Base Alloy Forging Rods, Bars, and Shapes, Specifications for, ASTM B124-51; ASA H7.1 (Revision of ASTM B124-49; ASA H7.1-1949)

Brass Wire, Specifications for, ASTM B134-51; ASA H32.1 (Revision of ASTM B134-50; ASA H32.1-1951)

Leaded Red Brass (Hardware Bronze) Rods, Bars, and Shapes, Specifications for, ASTM B140-51; ASA H33.1 (Revision of ASTM B140-50; ASA H33.1-1951)

Sponsor: American Society for Testing Materials

Mechanical

American Standards Published—

Preferred Thicknesses for Uncoated Thin Flat Metals, B32.1-1952 $1.00

Sponsors: Society of Automotive Engi-

neers; American Society of Mechanical Engineers

In Board of Review—

Track Bolts and Nuts, B18.10 (Revision of B18.10d-1930)

Sponsor: American Society of Mechanical Engineers

Mining

American Standards Published—

Safety Code for Installing and Using Electrical Equipment in and about Coal Mines, American Standard for, M2.1-1951 (Revision of American Safety Rules for Installing and Using Electrical Equipment in Coal Mines, M2-1926) $0.20

Sponsors: American Mining Congress; U. S. Bureau of Mines

Optics

In Correlating Committee—

Nomenclature for Radiometry and Photometry, Z58.1.1

Sponsor: Optical Society of America

Photography

American Standard Approved—

Spectral Diffuse Densities of Three-Component Subtractive Color Films, PH2.1

Sponsor: Photographic Standards (Correlating) Committee

In Board of Review—

Sheet Film Processing Tanks, Specifications for, PH4.2 (Revision of Z38.8.15-1949)

Photographic Trays, Specifications for, PH4.3

Photographic Hangers (Channel-Type, Plate and Sheet Film), Specifications for, PH4.4

Sponsor: Photographic Standards (Correlating) Committee

In Correlating Committee—

Dimensions for Aerial Film Spools, PH1.2-PH1.9 (Revision of Z38.1.32-1945 through Z38.1.34-1945 and Z38.1.36 through Z38.1.40-1945)

Roll Film and Unsensitized Leaders and Trailers for Aerial Photography, PH1.10 (Revision of Z38.1.4-1944)

Sensitometry and Grading of Photographic Papers, PH2.2 (Revision of Z38.2.3-1947)

Back Window Location for Roll Film Cameras, PH3.1 (Revision of Z38.4.9-1944)

Method of Determining Performance Characteristics of Focal-Plane Shutters Used in Still Picture Cameras, PH3.2 (To replace WS Z52.65-1946)

Exposure-Time Markings for Focal-Plane Shutters Used in Still Picture Cameras, PH3.3 (To replace proposed WS Z52.64)

Method for Determining Performance Characteristics of Between-the-Lens Shutters Used in Still Picture Cameras, PH3.4 (To replace Z52.63-1946)

Exposure-Time Markings for Between-the-Lens Shutters Used in Still Picture Cameras, PH3.5 (To replace WS Z52.62-1946)

Tripod Connections for American Cameras (¼ in.-20 thread), PH3.6 (Revision of Z38.4.1-1942)

Tripod Connections for Heavy-Duty or European Cameras (⅜ in.-16 thread adapter for ¼ in.-20 tripod screws), PH3.7 (Revision of Z38.4.2-1942)

Sponsor: Photographic Standards (Correlating) Committee

Pipe and Fittings

American Standard Published—

Section 8 on Gas Transmission and Distribution Systems of the American Standard Code for Pressure Piping, B31.1.8-1952 $1.25

Sponsor: American Society of Mechanical Engineers

In Correlating Committee—

Cast Iron Pit Cast Pipe for Water or Other Liquids, Specifications for, A21.2 (Revision of A21.2-1939)

Cast Iron Pipe Centrifugally Cast in Metal Molds, for Water or Other Liquids, Specifications for, A21.6

Cast Iron Pipe Centrifugally Cast in Sand-Lined Molds, for Water or Other Liquids, Specifications for, A21.8

Mechanical Joint for Cast Iron Pressure Pipe and Fittings, Specifications for, A21.11

Sponsors: American Gas Association; American Society for Testing Materials; American Water Works Association; New England Water Works Association

Radio

American Standards Published—

Power-Operated Radio Receiving Appliances, Standard for, C65.1-1952 $0.25

Sponsor: Underwriters' Laboratories

Safety

American Standard Approved—

Safety Code for Portable Wood Ladders, A14.1-1952 (Revision of A14.1-1948)

Sponsors: National Association of Mutual Casualty Companies; American Society of Safety Engineers; American Ladder Institute

In Correlating Committee—

Code for the Prevention of Dust Explosions in Terminal Grain Elevators, Z12.4; NFPA No. 61B (Revision of ASA Z12.4-1950)

Code for the Prevention of Dust Explosions in Flour and Feed Mills, Z12.3; NFPA No. 61C (Revision of ASA Z12.3-1946)

Code for Pulverizing Systems for Sugar and Cocoa, Z12.6; NFPA No. 262 (Revision of ASA Z12.6-1946)

Code for the Prevention of Dust Ignitions in Country Grain Elevators, Z12.13; NFPA No. 64 (Revision of ASA Z12.13-1946)

Code for the Prevention of Dust Explosions in the Manufacture of Aluminum Bronze Powder, Z12.11; NFPA No. 651 (Revision of ASA Z12.11-1946)

Code for Explosion and Fire Protection in Plants Producing or Handling Magnesium Powder or Dust, Z12.15; NFPA No. 652 (Revision of ASA Z12.15-1946)

Code for the Prevention of Dust Explosions in Coal Pneumatic Cleaning Plants, Z12.7; NFPA No. 653 (Revision of ASA Z12.7-1946)

Code for the Prevention of Dust Ignitions in Spice Grinding Plants, Z12.9; NFPA No. 656 (Revision of ASA Z12.9-1946)

Code for the Prevention of Dust Explosions in Woodworking Plants, Z12.5; NFPA No. 663 (Revision of ASA Z12.5-1942)

Sponsor: National Fire Protection Association

Approval Requested—

Proposed American Standard Code for the Prevention of Dust Explosions in Confectionery Plants, Z12.18; NFPA No. 657

Sponsor: National Fire Protection Association

Reaffirmation Approved—

Safety Code for Jacks, B30.1-1943 R1952

Code for Cranes, Derricks and Hoists, B30.2-1943 R1952

Sponsor: American Society of Mechanical Engineers

Street and Highway Traffic

In Correlating Committee—

Practice for Street and Highway Lighting, D12.1 (Revision of D12.1-1947)

Sponsor: Illuminating Engineering Society

Time and Motion Study

Project requested—

Method of Establishing Motion Time Data

Requested by: Methods Time Measurement Association

Wood Industry

Project requested—

Wood Sawing Practice for Small Sawmills

Requested by: Defense Production Administration

What's New on American Standard Projects

Abbreviations for Scientific and Engineering Terms, Y1—

Sponsor: The American Society of Mechanical Engineers.

Stanley A. Tucker, Publications Editor, The American Society of Mechanical Engineers, has been named chairman of this new committee. Two subcommittees have already completed draft standards of some 40 pages. These are now being checked for inclusion in a final draft. Mr

Tucker expects that the new edition, to replace American Standard Abbreviations for Scientific and Engineering Terms, Z10.1-1941, may be published within a year.

National Electrical Code, C1—

Sponsor: National Fire Protection Association.

Interpretation No. 387 was issued by the National Electrical Code Committee October 10, 1952. It applies to Section 2351-a on Unprotected Service Conductors of the 1952 edition.

Statement: A single family dwelling constructed on concrete and cement block foundation walls has a two (2) foot crawl space, between the bottom of the floor joists and the ground, with no basement. The building is served by overhead service drop conductors with meter installed on outside building wall.

Question: Is it the intent of Section 2351-a to permit the service conductors to be installed in the crawl space secured to the bottom of the floor joist extending a distance of forty (40) feet to the service disconnect in the utility room?

Answer: No.

Small Tools and Machine Tool Elements, B5—

Sponsors: Metal Cutting Tool Institute; Society of Automotive Engineers; National Machine Tool Builders Association; The American Society of Mechanical Engineers.

The diversity of dimensions for milling machine cutters using inserted carbide, cast-alloy, or high-speed steel blades has prompted Sectional Committee B5 to develop a proposed American Standard. Purpose of the proposed standard, "Inserted Blade Milling Cutter Bodies," is to provide interchangeability and to reduce the number of blade cutter sizes now in use. A survey has indicated that practically all cutters can be standardized in six groups, based on the type of milling to be done. The cutters range from 4 to 30 inches in diameter.

Copies of the proposal can be obtained by writing to D. M. Schackelford, Standards Administrator, American Society of Mechanical Engineers, 29 West 39th Street, New York 18, N. Y.

News Briefs

• • **The Wirebound Box Manufacturers Association** is calling defense contractors' attention to the fact that MIL-B-107A specification for wirebound boxes for overseas shipment of defense goods has superseded and supplanted the old JAN-B-107 specification.

Purchasing agents, packaging engineers, and shipping executives are being cautioned that JAN-B-107 wirebound shipping containers for overseas shipment are no longer in keeping with government requirements, regardless of the wording of government contracts or bid invitations.

The Association's headquarters in Chicago pointed out that some government procurement officers throughout the country continue to stipulate JAN-B-107 boxes, apparently not yet aware that the new MIL-B-107A specification became effective last September 1 and replaced the older specification.

L. S. Beale, secretary of the association, pointed out that government invitations to bid on defense commodities almost invariably contain this statement:

"The following specifications, of the issue in effect on the date of invitation for bids, form a part of this specification."

Thus, Mr. Beale said, those bidding for contracts that stipulate wirebound boxes for overseas packing made in accordance with the JAN-B-107 specication should compute their packing costs upon the basis of wirebound boxes made in accordance with the MIL-B-107A specification, being the "issue in effect."

The MIL-B-107A specification leaves the construction of some sizes or types of wirebound boxes practically unchanged from what they were under the JAN-B-107 specification, but results in many others being constructed more strongly than before and even better able to absorb and withstand the hard usage and abuse often encountered in export shipment.

• • **Manufacturers of gas appliances** that carry electrical components can now have their equipment examined for compliance with the Canadian Electrical Code by the American Gas Association Laboratories under an agreement with the Canadian Standards Association. This new service relieves manufacturers of gas appliances of the necessity of shipping their products to the Canadian Standards Association for examination of electrical components under the provisions of the Canadian Electrical Code.

For the past 25 years the AGA Laboratories have functioned through an affiliation agreement, as the official testing agency for the Canadian Gas Association on gas appliances and accessories. Appliances found to meet the requirements of American Standards for gas appliances are approved by the Canadian Gas Association and required to display its CSA Approval Seal. Because of differences that exist between provisions of the Canadian Electrical Code and the American Standard National Electrical Code, however, the AGA Laboratories find it necessary to give special examinations to the electrical components of gas appliances intended for the Canadian market.

Any manufacturer may request AGA to examine gas appliances employing electrical components to determine compliance with the Canadian Electrical Code. Appliances found to meet this Code may then be granted approval, not only by the Canadian Gas Association, but also by the Canadian Standards Association.

• • **A number of revisions** and additions are included in the second edition of the Canadian Standards Association's "Established Lists of Unfinished Machine, Carriage and

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STATEMENT OF THE OWNERSHIP, MANAGEMENT, AND CIRCULATION REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, AND JULY 2, 1946 (Title 39, United States Code, Section 233)

Of STANDARDIZATION published monthly at New York, N. Y., for Oct 1, 1952.

1. The names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, American Standards Association, Inc, 70 East 45th St, New York 17. Editor, Ruth E. Mason, 70 East 45th St, New York 17. Managing editor, none. Business manager, none.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.)

American Standards Association, Inc, 70 East 45th St, New York 17, Roger E. Gay, President; Edward T. Gushée, Vice-President; George F. Hussey, Jr, Managing Director.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.)

None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was (This information is required from daily, weekly, semiweekly, and triweekly newspapers only.)

RUTH E. MASON.

Sworn to and subscribed before me this 11th day of September, 1952.

HOWARD B. KINCH.

(Seal) (My commission expires March 30, 1954.)

HOWARD B. KINCH,

Notary Public, State of New York.

Qualified in Westchester County.

No. 60-7266100.

Cert. filed with Register, N. Y. and Bronx Counties.

Commission Expires March 30, 1954.

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Plough Bolts and Nuts." The new edition includes tables for classes 2A and 2B unified screw threads. Bolt length tolerances have been revised and a table of minimum thread lengths have been included.

In addition to outlining requirements for threads and dimensions and tolerances, 19 tables are included, together with appropriate illustrations, for the various types of screw products covered by this specification.

• • **The Canadian Standards Association** has announced publication of the first edition of its Code for Safety in Electrical and Gas Welding and Cutting Operations.

The Code deals with the protection of persons from injury and illness and the protection of property (including equipment), from damage by fire and other causes arising from electric and gas welding and cutting equipment, its installation, operation, and maintenance.

• • **An interesting little booklet** reporting on a visit to the United States has just been issued by a Swedish delegation. The delegates studied the U. S. standards program under the auspices of the Economic Cooperation Administration. Olle Sturen, Jan Ollner, and Ake Ekelund, Secretaries of the Swedish Standards Association, members of the delegation, planned their program in close collaboration with the American Standards Association. Their report (in Swedish, of course) tells in detail what they found out about the workings of standardization in the United States.

• • **A committee to establish standards for veterinary hospitals** has been named by the American Veterinary Medical Association. A study will be made of typical hospital needs in various sections of the nation and standards for construction and recommendations for hospital procedures will be listed, the Association announced. The Association has found a growing demand for expanded animal hospital facilities, it was announced at the organization's eighty-ninth annual meeting in June.

The Surgical Experiment

(Continued from page 402)

surgery on a more scientific basis.

We must use every means at our disposal to lessen the peril of the surgical experiment. In so doing we hold true to the physican's mission in life—"the multiplying of human enjoyments, and the mitigation of human suffering."

IEC at Scheveningen

(Continued from page 409)

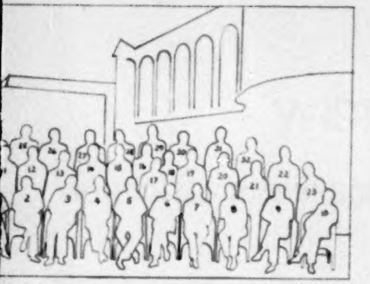
"5. USA can be very influential in this work but it will be necessary for USA to take a genuine interest and actively prosecute such work. We feel that we are not doing as much in this respect as we should.

"6. Progress is slow, but progress is being made."

I believe that all who take part directly in the IEC conferences come home with an increased appreciation of the importance of this work in the development of international standardization. We also have an increased awareness of its difficulties, of the large place which American industry now has in the work, and of the value of doing even more work in the future. This international standardization benefits our own country and also benefits the other industrial countries of the world. Let us be sure we all play our full part in this important and expanding movement for the stimulation of international trade and international understanding.

• • **The Commodity Standards Division** of the United States Department of Commerce has announced adoption of an additional white polystyrene color for the production of refrigerator parts. The new color, designated as PSP-04, becomes officially one of 19 colors covered by Commodity Standard CS 156-49 and has been approved by most of the refrigerator manufacturers.

Standard samples of the new color will be made available in the very near future.



Identification, Committee of Action, International Electrotechnical Commission, page 411— (1) J. Herlitz (Sweden); (2) P. Dunsheath (Treasurer); (3) E. Wiener (Belgium); (4) H. Osborne (U. S.A., Elected President 1952); (5) E. Uytborck (Past President); (6) M. Schiesser (President, 1949-1952); (7) J. de Artigas (Spain); (8) A. Lange (France); (9) H. Binney (U.K.); (10) W. Bahler (Netherlands); (11) J. McNair (U.S.A.); (12) A. Tsirimokos (O.E.E.C.); (13) R. Sogge (U.S.A.); (14) R. Vieweg (Germany); (15) A. Damianovitch (Yugoslavia); (16) J. de Chambure (France); (17) C. le Maistre (General Secretary); (18) A. Roth (Switzerland); (19) G. Poppovic (Austria); (20) F. Wüster (Austria); (21) F. Avcin (Yugoslavia); (22) C. Stanford (Tech Asst IEC); (23) E. Saraoja (Finland); (24) J. Smoes (Belgium); (25) F. Tedeschi (Italy); (26) N. Voorhoeve (Netherlands); (27) J. Daruty de Grandpre (France); (28) G. de Zoeten (Netherlands); (29) K. Carstensen (Denmark); (30) F. Wade-Cooper (India); (31) J. Stanley (U.K.); (32) L. Ruppert (Administrative Secretary).

Meter Standard

(Continued from page 418)

fications for a Radio Noise Meter, 0.0015 to 25 Megacycles per second.

This proposed standard was published for trial use last year. The two together completely cover the frequency range of 0.015 to 1000 megacycles per second.

Methods of measurement are not included in this report. Work is being done by industry and by the Armed Services to develop methods applicable to this frequency range. These methods necessarily differ from those applicable to the lower frequency range.

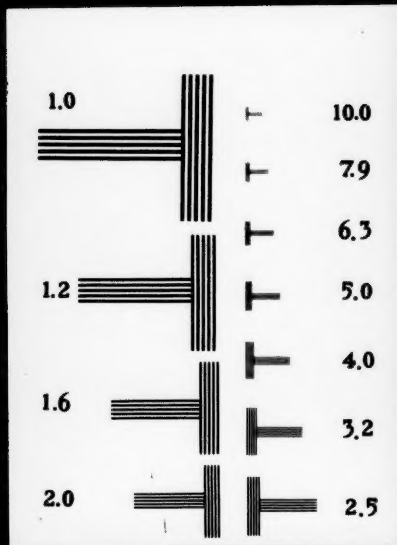
Comments on the Proposed American Standard Specifications for Radio Noise and Field Intensity Meters, 20 to 1000 Megacycles per Second, C63.3, should be sent to the Secretary, Sectional Committee C63, care of National Electrical Manufacturers Association, 155 East 44 Street, New York 17, N. Y.

• • **Frederick S. Blackall,** president and treasurer of the Taft-Peirce Manufacturing Company of Woonsocket, R. I., has been elected president of the American Society of Mechanical Engineers for 1953. Mr Blackall was a member of the committee which visited London in 1946 to discuss the unification of American and British differences in screw threads. These discussions contributed to the final approval of the Unified Thread System. Mr Blackall is a Fellow of ASME and a member of the American Society for Metals, American Society of Tool Engineers, and the American Ordnance Association.

• • **The Polish Standards Committee,** Warsaw, announces appointment of L. J. Grzedzinski as Director General. Mr Grzedzinski succeeds Dr J. Oderfeld, who has retired to devote himself entirely to scientific work. On assuming his new duties, Mr Grzedzinski issued an announcement to the national standards associations in which he said: "It is my intention to spare no effort to acquit myself well of this honorable and difficult task. I ask you for the continued friendly cooperation, which the Polish Standards Committee has always enjoyed in the past. On my part I wish to assure you that we shall endeavor to maintain best relations with all national committees, members of the ISO, who are united in the common cause of promoting technical progress for the benefit of humanity, for peace, and prosperity in the future."

• • **The Australian Standards Association** has endorsed American Standard Methods of Test for Shrinkage and Laundering of Woven Cotton Cloth, ASTM D 437-36; ASA L10-1936. The American Standard will be a supplement to the Australian Association's Standard Methods of Testing Woven Textile Fabrics, CL.1. "Your willingness to allow us to use the internationally recognized material in your standards is very greatly appreciated," declared W. Rayner Hebblewhite, SAA director, in announcing the Australian Association's action.

RESOLUTION CHART



100 MILLIMETERS

INSTRUCTIONS Resolution is expressed in terms of the lines per millimeter recorded by a particular film under specified conditions. Numerals in chart indicate the number of lines per millimeter in adjacent "T-shaped" groupings.

In microfilming, it is necessary to determine the reduction ratio and multiply the number of lines in the chart by this value to find the number of lines recorded by the film. As an aid in determining the reduction ratio, the line above is 100 millimeters in length. Measuring this line in the film image and dividing the length into 100 gives the reduction ratio. Example: the line is 20 mm. long in the film image, and 100/20 = 5.

Examine "T-shaped" line groupings in the film with microscope, and note the number adjacent to finest lines recorded sharply and distinctly. Multiply this number by the reduction factor to obtain resolving power in lines per millimeter. Example: 7.9 group of lines is clearly recorded while lines in the 10.0 group are not distinctly separated. Reduction ratio is 5, and 7.9 x 5 = 39.5 lines per millimeter recorded satisfactorily. 10.0 x 5 = 50 lines per millimeter which are not recorded satisfactorily. Under the particular conditions, maximum resolution is between 39.5 and 50 lines per millimeter.

Resolution, as measured on the film, is a test of the entire photographic system, including lens, exposure, processing, and other factors. These rarely utilize maximum resolution of the film. Vibrations during exposure, lack of critical focus, and exposures yielding very dense negatives are to be avoided.